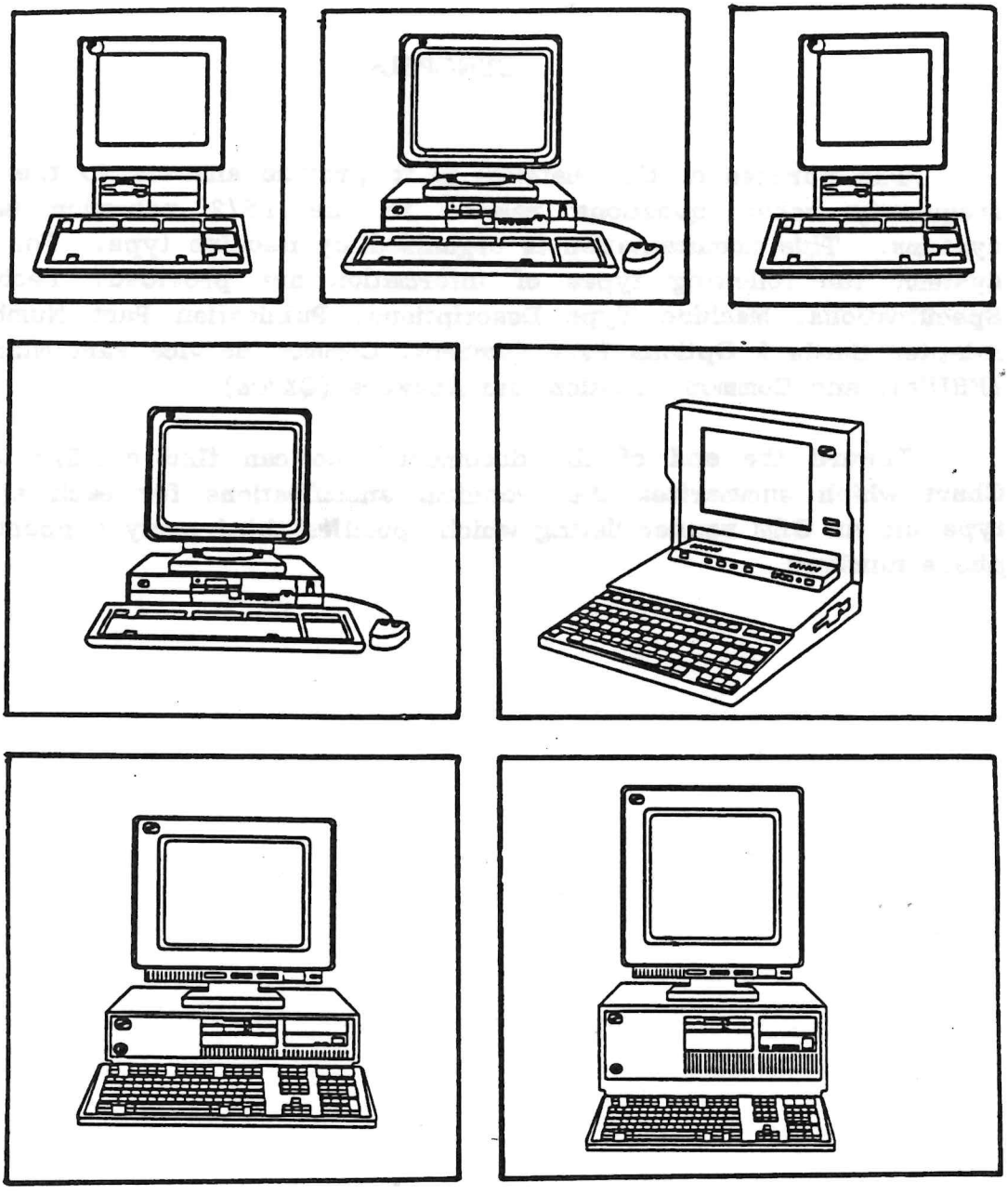
PS/2 Advanced Technology
Industry Standard Architecture
Common
Questions & Answers



SYNOPSIS

The purpose of this material is to provide answers to the more frequently asked questions related to the PS/2 non-microchannel systems. This documentation is organized by machine type. For each system, the following types of information are provided: Technical Specifications, Machine Type Descriptions, Publication Part Numbers, Adapter Cards & Options Part Numbers, Common Service Part Numbers (FRU's), and Common Question and Answers (Q&A's).

Toward the end of the document, one can find a PS/2 Quick Chart which summarizes the technical specifications for each system type and an OEM vender listing which specifies third party support line phone numbers.

PS/2 Advanced Technology Industry Standard Architecture Common Questions & Answers

Scott Gilliland

IBM Corporation
NDD National Support Center
Level 1
Marketing Support Representative
12/10/91

TABLE OF CONTENTS

	PAGE
Model 25	
Technical Specifications	5
Machine Types	5-6
Publications	6
Adapter Cards and Options	6
Common Service Part Numbers	7
Common Questions and Answers	7-12
Model 30	
Technical Specifications	13
Machine Types	13
Publications	13
Adapter Cards and Options	14
Common Service Part Numbers	14
Common Questions and Answers	15-18
Model 25-286	
Technical Specifications	19
Machine Types	19
Publications	20
Adapter Cards and Options	20
Common Service Part Numbers	20-21
Common Questions and Answers	21-23
Model 30-286	
Technical Specifications	24
Machine Types	24
Publications	25
Adapter Cards and Options	25
Common Service Part Numbers	26
Common Questions and Answers	26-32
Model L40SX	
Technical Specifications	33
Machine Types	33
Publications	33
Adapter Cards and Options	34
Common Service Part Numbers	34
Common Questions and Answers	35-43

PS/2 Model 35SX

Technical Specifications	44
Machine Types	44-45
Publications	45
Adapter Cards and Options	45
Common Service Part Numbers	46
Common Questions and Answers	47-55

PS/2 Model 40SX

Technical Specifications	56
Machine Types	56
Publications	57
Adapter Cards and Options	57
Common Service Part Numbers	58
Common Questions and Answers	59-67

PS/2 Quick Reference Chart 68-69

Manufacturers' Support Phone Numbers 70

PS/2 Model 25

Technical Specifications

Processor	INTEL 8086
Clock Speed	8 Mhz
Bus Speed	4.77 Mhz
Bus Size	8 Bit
Memory	512k - 640k
Memory Speed	150ns
Graphics	MCGA
Diskette Drive	3.5" 720k
Fixed Disk	20MB
Power Supply	90-127 VAC
Expansion Slots	1 Full & 1 3/4

Machine Type Description

8525-001	One 720k diskette drive Space saving keyboard Monochrome Display 12" 512k memory
8525-G01	One 720k diskette drive 101 key enhanced keyboard Monochrome Display 12" 512k memory
8525-004	One 720k diskette drive Space saving keyboard Color Display 12" 512k memory
8525-G04	One 720k diskette drive 101 key enhanced keyboard Color Display 12" 512k memory

8525-L01	One 720k diskette drive 101 key enhanced keyboard Monochrome Display 12" 640k memory IBM token ring adapter II
8525-L04	One 720k diskette drive 101 key enhanced keyboard Color Display 12" 640k memory IBM token ring adapter II

Model 25 Publications:

Guide to Operations	75X1051
HMS Supplement	15F2191 (Pamphlet)
HMS Supplement	75X1054 (Maps & Diags)
Technical Reference	75X1055
HMR Supplement	75X1059 (Design Info.)

Model 25 Adapter Cards and Options:

Token Ring Adapter 16/4	25F7367
Token Ring Adapter II	25F9858
PC Network Baseband II	1501220
PC Network Baseband /A	1501223
128k memory upgrade	78X8955
20MB Fixed disk (80ms)	78X8958
Second 720k Diskette 1/3"	6451056
Second 720k Diskette 1/2"	78X8956
IBM PS/2 Mouse	6450350
External Tape Backup 60MB	6157001
External Tape Backup 150MB	6157002
External Tape Adapter	92X6063
Sytos Plus Software	15F7194
Serial/Parallel Adapter	6450215
PC Music Feature Card	81X8630
M-Audio Capture & Playback	87F9908
SDLC Adapter	1501205
Enhanced 5250 Adapter	30F5383

IBM PC FACTORY 800-426-7065 $20

TRY MEGAHOUSE IN COMPUTER SHOPPER FOR 3RD PARTY HD REPLACEMENT

Model 25 Common Service Part Numbers:

System board	00F2100
Bus adapter	00F2101
Diskette Cable 1/2"	00F2109
Diskette Cable 1/3"	33F4949
1/2" Drive Bezel	00F2112
1/3" Drive Bezel	33F4947
Color Display Assembly	00F2053
Monochrome Display	00F2052
256k memory simm	61X8906
64x1 memory chips(small)	00F2120
64x4 memory chips(large)	00F2121
Diskette Drive 1/2"	61X8899
Diskette Drive 1/3"	27F4119
Drive Shield	33F4904
Fixed Disk (Integrated Controller)	61X8929
Fixed Disk (Separate Controller)	27F4130

Model 25 Common Questions & Answers:

Q: Can I upgrade my Model 25 from 512k to 640k?

A: YES, The Model 25 can be upgraded to 640k by simply adding the 128k upgrade kit (78X8955). This kit includes two 64x1 memory chips and four 64x4 memory chips that plug directly onto the system board. The 2MB XMA adapter is NOT supported on the Model 25.

Q: What type of graphics does the Model 25 support?

A: The Model 25 system board comes standard with MCGA graphics. MCGA stands for Multi-Color Graphics Array and it is an enhancement of the old CGA that was standard on Family 1 PC's. *Note When using software written for the enhanced graphics adapter (EGA), also used on old PC's, without the PS/2 display adapter, the software may not perform as intended (Usually will display in black and white--not color).

Q: Can I upgrade the MCGA on my Model 25 to VGA?

A: IBM does not offer an option to upgrade the Model 25 from MCGA to VGA. On February 8, 1991, IBM withdrew the PS/2 display adapter which would allow VGA capability with an external PS/2 display. This adapter would disable the integrated MCGA and internal video.

Q: My Display is rolling. Are there any adjustments for the display?

A: There are no adjustments for the Model 25 display. Usually a rolling display indicates that the system board must be replaced. There is a test that the dealer can perform to see if the display must also be replaced. This test requires measuring the voltages on the pins in the video connector that control vertical and horizontal sync. *Note -- For a rolling screen, check to see if the system qualifies for ECA 036 (Exp 8-30-92).

Q: I have a display that I need to send in to warranty. What do I return?

A: On the Model 25, the display and power supply are one unit. You should remove all of the white plastic and have only metal and dark grey plastic remaining.

Q: Do I remove the memory on the system board for Warranty?

A: YES, always remove the memory from any system board you are returning for warranty. This applies to All PS/2 systems.

Q: Is there a fixed disk available for the Model 25?

A: YES, there are two fixed disk that will work in the Model 25; however, one has been withdrawn (27F4130). This 27F4130 fixed disk which is no longer available except as a service part, is a 20MB fixed disk with separate controller. With an access time of 39ms, it had no compatibility problems in the Model 25. The second fixed disk, currently available as 78X8958, is an 80ms 20MB with an integrated controller.

Q: What is a C8000 ROM error?

A: A ROM error occurs when two adapter cards with the same address are installed in a system. This can occur when using the 20MB fixed disk adapter from 27F4130 with the external 5.25" diskette drive adapter. They both have a ROM address of C8000. The problem can be resolved by simply changing the ROM address using jumpers on the fixed disk adapter.

JUMPER		PINS A-B	PINS C-D	ROM ADDRESS
A	B	OPEN	OPEN	C8000-CBFFF
C	D	SHORTED	OPEN	D0000-D3FFF
		OPEN	SHORTED	D8000-DBFFF
		SHORTED	SHORTED	E0000-E3FFF

Q: I have a Model 25 with a color display and I am having trouble installing DOS 4.0. The DOS 4.0 diskettes seem to work fine on other machines. Is this a problem with my Model 25 diskette drive?

A: NO, it is not a problem with the diskette drive. The problem is that the early DOS 4.0 diskettes and some other original program diskettes were recorded at a lower than normal amplitude. When trying to install these diskettes on a Model 25 color model, the color display emits an electrical interference that interferes with the signal from the diskettes and the drive cannot read the diskette. You might get partially through the installation and receive the error message "Disk Read Error, Abort, Retry, Ignore". The diskettes can be copied on another PS/2 machine and the diskcopy diskettes should then install properly. To prevent this from happening, IBM began shipping the Model 25 with a diskette drive shield in 2nd Quarter of 1989. The shield is available as a service part and can be installed in any Model 25 at no cost to the customer. PN (33F4904) includes the shield, attachment screws and instructions.

Q: Are internal modems supported on the Model 25?

A: NO, Internal modems are not supported on the Model 25. Internal modems depend upon the system speaker in which they are installed. The Models 25, 30, 30-286, and 25-286 do not have system speakers. Instead they use a sound module which does not function as a speaker for the internal modem. External modems which have their own speakers work fine on the Models 25, 30, 30-286, and 25-286.

Q: My Model 25 keeps losing time and date when I turn it off. Why is it doing this?

A: The Model 25 does not have a battery backup in order to store time and date information. IBM does not make or support a battery for the Model 25. There are many third party solutions on the market and references to these can be found in trade magazines such as PC Week, Computer Shopper, PC Magazine,etc. IBM does not recommend any specific brand.

Q: I have a Model 25 with a space saving keyboard. Can I trade it in for an enhanced keyboard?

A: NO, Although the system board will support the 101 key enhanced keyboard, there is not an upgrade program for the space saving keyboard to the enhanced keyboard. If a customer needs an enhanced keyboard, he will have to purchase one at retail prices through IBM parts Direct Customer Ordering 1-303-924-4100. A second way a keyboard can be ordered is through service parts. The part number for the enhanced keyboard is 1392090.

Q: DOS 4.0 is not displaying in color on my Model 25?

A: DOS 4.0 will display in shades of gray when used in the graphics mode on an MCGA machine. In order to get color to display, you have to change the mode to text. This is done by editing the dosshell.bat file. On the line that begins @shellc, you must add a /TEXT to the end of the line. This will put the system into text mode, and the DOS 4.0 shell will display in color after rebooting.

Q: I have installed Windows on my Model 25 and it's not in color?

A: On the Model 25 Windows can not show in color. The MCGA graphics only show in black and white.

Q: What are the Model 25 models C02, C05, K02, and K05?

A: These models are called collegiate models and are intended to be sold with the collegiate kit. These are similar to the 001, 004, G01, and G04 with some additional hardware. The Models C02 and C05 have the Space Saver keyboard, a second diskette drive and the 128k memory upgrade. Models K02 and K05 have the enhanced keyboard, a second diskette drive and the 128k memory upgrade. All four systems are not sold through the dealer channels and are available only to educational institutions through IBM educational representatives.

Q: What is the collegiate kit?

A: The collegiate kit, part number 6024772, consists of the following items: an IBM PS/2 mouse, DOS 3.3, Full Microsoft Windows 1.04, Microsoft Windows Write, Windows Paint, Windows Card File & Desktop accessories, Collegiate Kit system diskettes and tutorial, Four blank 3.5" diskettes and an installation guide. The collegiate kit requires 640k and either 2 diskette drive or 1 diskette drive and a fixed disk. For additional information reference Announcement Letter NDD 87-423.

Q: My collegiate kit installation instructions call for 2 floppy drives. I am having trouble installing to my fixed disk.

A: The Collegiate system diskettes and tutorial were initially designed for installation on a 2 floppy drive Model 25. When using a fixed disk, you may encounter problems. If you experience similar problems, contact the IBM National Support Center and ask for the diskette entitled Collegiate Kit Fixed Disk Installation Diskette. An IBM Marketing Support Representative can send you this via the IBM Mail Machine. (This Diskette should allow the software to install onto the Fixed Disk).

Q: My Model 25 has some sort of a shield around the A drive. What is this?

A: The Model 25's that were manufactured in 2nd quarter of 1989 or after have a shield included that is installed over the A drive. This is to prevent the problems that occurred because of the electrical interference on the color Model 25's. This shield should remain with the Model 25 if the drive must be replaced. The shield is not necessary if a second B drive is installed. The shield is available as a service part for those without it. 33F4904.

Q: What is the Model 25 carrying case?

A: The Model 25 carrying case PN 78X8954, has been withdrawn. The case was designed to simplify the relocation of this system. It had storage areas for diskettes, manuals, power cord and the keyboard in addition to the system unit.

Q: I am trying to connect the 5.25" external 360k diskette drive adapter and I can not connect the cable to the adapter card. The cable has pins on it and the adapter card has an edge connector.

A: Some Model 25's that began shipping after September, 1989 have a different diskette drive. The older type drive drive is called a 1/2 height drive; the newer drive is called a 1/3 high or 1" high drive. The drives function the same, but they use different bezels and the cable connection is different. When trying to connect an external diskette drive, there is an extra cable that must be purchased only for the systems with 1/3 high drives. This 3" cable (6451033) allows the B drive cable with pin connection to be adapted to an edge connection. Since the 1/2 high systems already has edge connections the extra cable is NOT needed.

Q: I want to add a second diskette drive to my Model 25 what drive do I order?

A: When adding a second drive to the Model 25, it is important to know what height system one has so that the Drive and the Diskette cable will connect. It is possible to determine which type of drive is in the machine by looking at the system serial number or by looking at the drive light location. If serial number is above 100,000 then the machine will have 1/3 high drives (Below 100,000 is 1/2 high). The location of the drive light can also indicate the drive height. If the drive light is located below the media insertion slot, the machine will have 1/3 high diskette drives (Above the media insertion slot means 1/2 high drives).

PS/2 Model 30

Technical Specifications

Processor	INTEL 8086
Clock Speed	8 Mhz
Bus Speed	4.77 Mhz
Bus Size	8 Bit
Memory	640k
Memory Speed	150ns
Graphics	MCGA
Diskette Drive	3.5" 720k
Fixed Disk	20MB- 30MB-001
Power Supply	70W Auto Sense
Expansion Slots	3 Full Slots

Machine Type Description

8530-002	Two 3.5" 720k diskette drives 101 key enhanced keyboard 640k memory
8530-021	One 3.5" 720k diskette drive 20MB fixed disk 101 key enhanced keyboard 640k memory
8530-001	One 3.5" 720k diskette drive 101 key enhanced keyboard 640k memory

Model 30 Publications

Guide to Operations	68X2230
HMS Supplement	15F2191 (pamphlet)
HMS Supplement	68X2202 (Maps)
Technical Reference	68X2201
HMR Supplement	68X2203 (Design Info)

Model 30 Adapter Cards and Options:

Token Ring Adapter 16/4	25F7367
Token Ring Adapter II	25F9858
PC Network Broadband II	1501220
PC Network Baseband	1501221
20MB fixed disk (001)	6451075 Enhanced 78x8958
30MB fixed disk (001)	6451076
3.5" 720k Diskette Drive	Withdrawn (was 6451027)
IBM PS/2 Mouse	6450353
External Tape Backup 60MB	6157001
External Tape Backup 150MB	6157002
External Tape Adapter	92X6063
Sytos Plus Software	15F7194
Serial/Parallel Adapter	6450215
PC Music Feature Card	81X8630
M-Audio Capture & Playback	87F9908
SDLC Adapter	1501205
Enhanced 5250 Adapter	30F5383

Model 30 Common Service Part Numbers:

Bus Adapter (Battery)	61X8910
Diskette Drive Cable 1/2"	61X8900
Diskette Drive Cable 1/3"	34F0002
256k memory simm	61X8906
Diskette Drive 1/2"	61X8899
Diskette Drive 1/3"	27F4119 - 96F7678
1/2" Drive Bezel	61X8901
1/3" Drive Bezel	27F4230
20MB Fixed disk 80ms	61X8929
20MB Fixed disk (Enhanced)	6128285
30MB Fixed disk	6128279
Fixed Disk Cable (021)	61X8903
Fixed Disk Cable (001)	27F4178
PS/2 display adapter	1887743
2MB Expanded Memory Adap	1497250
Power Supply 70Watt	61X8905
System Board (Older BIOS)	61X8907
System Board (Newer BIOS)	33F8474
101 key keyboard	1392090
101 key keyboard cable	61X8898

Model 30 Common Questions & Answers:

Q: Can I upgrade the memory on my Model 30 above 640k?

A: The memory on the Model 30 can NOT be upgraded beyond 640k with an IBM memory option. However, there are third party memory expansion cards that are compatible and will increase the memory above 640k. This additional memory will be expanded memory. An 8086 processor is not capable of extending memory. Information and support for these memory expansion cards should be provided by the OEM vender.

Q: Can I disable the MCGA video port on my Model 30 in order to add a VGA card?

A: It may be possible for an adapter card to automatically disable the MCGA port upon POST, for example, the PS/2 Display adapter (withdrawn 2/8/91), but unless the card is designed to disable the MCGA upon POST one will probably get a video conflict. If not by design of the hardware, the video port on the Model 30 can only be disabled through programming. There are NO jumper settings or switch settings that can easily disable the video port. Therefore, with the information contained in the Model 30 Technical Reference Manual (68X2201) and programming skills, one can write a program that will disable the video port.

Q: Can I disable the serial port on the Model 30?

A: The serial port on the Model 30 can only be disabled through programming. There are no switch settings or jumper settings that will allow one to disable the serial port on the system board.

Q: What is the maximum number of serial ports and parallel ports IBM supports on the Model 30?

A: The BIOS on the Model 30 system board will support two serial ports and two parallel ports. This is done by installing the AT serial/parallel adapter and setting the jumpers on it to the alternate positions.

Q: I would like my Model 30 to have a 286 processor. Is there an upgrade to take the Model 30 to a Model 30 286?

A: IBM does not offer any processor upgrades for the Model 30. The Model 30 and the Model 30 286 are different in aspects other than the processor alone. The Model 30 has 720k diskette drives and the Model 30 286 has 1.44MB diskette drives. In addition, the Model 30 has a 70 watt power supply where as the Model 30 286 has a 90 watt power supply. Also, the Intregrated Video on each sytem differs. The Model 30 has MCGA and the Model 30 286 has VGA integrated on the system board.

Q: I'm trying to install a 30MB fixed disk in my model 30. When FDISK is run a "Divide Error" or "Divide Overflow" results.

A: If a "Divide Error" or "Divide Overflow" message appears while running FDISK on an IBM 20MB (P/N 6451075 or FRU 6128285) or an IBM 30MB (P/N 6451076 or FRU 6128279) fixed disk, it is most likely due to an incompatibility between the system board BIOS level and fixed disk drive. The following chart indicates the Model 30 types and serial numbers that have the BIOS level which can support the enhanced 20MB and 30MB fixed disk:

NOTE: The serial number is located on a silver lable located in the front lower right-hand corner of the system unit.

to upgrade to a 30mb a 32mb.

Type	Serial Number
8530-001	ALL Serial Numbers
8530-021	Serial numbers BETWEEN 2500000-2999999 55AA001-55ZZ999.
8530-002	Serial numbers ABOVE 7000000.

NOTE: The serial number range refers to the 7 digits after the "-". For example 23-0100000 or 72-2500000.

Q: If one does not know the type and serial number of his Model 30 to determine the BIOS level, can he tell anything from the BIOS date?

A: YES, The BIOS date as well as a system board FRU number can be used to determine the type system board in the Model 30. The following chart indicates an identification for the Current Level BIOS system board v/s Older Level BIOS system board.

Current BIOS System Board	Older BIOS System Board
System Board FRU 33F8474	System Board FRU 61X8907
BIOS DATE of 1/1/89 or later	BIOS DATE earlier than 1/1/89

Q: How can the BIOS date on my Model 30 be determined?

A: One method for determining the BIOS date is through Debug. At a DOS prompt type "debug", and the Debug prompt (-) will appear. At the Debug prompt type the following: D FFF0:00F0 After entering this, 8 lines of HEX can be seen with the BIOS date in the upper right hand corner. To exit out of Debug enter the letter "Q".

A second method for determining the BIOS date is through BASIC. Enter into "BASIC" and type the following syntax in ALL CAPS. This will display the BIOS date.

```
DEF SEG=-1:FOR X=5 TO 12:PRINT CHR$(PEEK(X));:NEXT
```

Q: How can I determine if my Model 30 has 1/2 high or 1/3 high diskette drives? Which ones have pin connections and which one have edge connections?

A: The diskette drive height can easily be determined by noting the position of the drive indicator light. If the diskette drive light is located ABOVE the media insertion slot then the machine will have 1/2 high (edge connection) drives and floppy cables. If the diskette drive light is located BELOW the media insertion slot then the machine will have 1/3 high (pin connection) drives and floppy cables.

Q: Can I install an external 5.25" diskette drive into the Model 30?

A: YES, The 360k external 5.25" diskette drive is supported in the Model 30. When adding a 360k external 5.25" diskette drive, one will need the external adapter 6450244 and the external 360k drive 4869001. With the older Model 30's, which had 1/2 high drive cables, the drive and adapter was all that was needed when connecting the 360k external drive. On the other hand, if the Model 30 had 1/3 high drive cables then the installation will require an adapter cable 6451033. This allows the 1/3 high drive cable, which has a pin connection, to be converted to an edge connection that will properly connect to the external 5.25" drive adapter card. **NOTE the 5.25" external adapter requires the B drive drive cable; therefore, one can not have two internal 720k floppies if the external 360k drive is used. Second, the 1.2MB external diskette drive is NOT supported on any AT ISA system.

Q: Can a 1.44Mb diskette drive be installed in the Model 30?

A: NO, IBM only supports the 720k diskette drive in the Model 30. The BIOS will not support the 1.44Mb diskette drive.

Q: I need to replace the battery in my model 30 but I do not see a part number for the battery?

A: The Model 30 has a system battery that is soldered onto the bus adapter. It is a 15-year lithium type battery with a 3 volt capacity. Because of this low voltage and low current drain, it is soldered on the bus adapter instead of being removable. Soldering prevents corrosion build-up on the contacts which could create a service call long before the battery failed. To order a new battery, order the BUS ADAPTER (61X8910).

Model 25 286

Technical Specifications:

Processor	INTEL 80286
Clock Speed	10Mhz
Bus Speed	5 Mhz
Bus Size	16 Bit
Memory	512k - 4MG
Memory Speed	120ns
Graphics	VGA
Diskette Drive	1.44Mb
Fixed Disk	20MB or 30MB
Power Supply	124.5 Watts
Expansion Slots	1 Full & 1 3/4

Machine Type Description:

8525-006	One 1.44Mb diskette drive Space saving keyboard Color Display 1MG memory
8525-G06	One 1.44Mb diskette drive 101 key enhanced keyboard Color Display 1MG memory
8525-036	One 1.44Mb diskette drive Space saving keyboard Color Display 30MB fixed disk 1MG memory
8525-G36	One 1.44Mb diskette drive 101 key enhanced keyboard Color Display 30MB fixed disk 1MG memory

Model 25-286 Publications:

Guide to Operations	15F2179	
HMS Supplement	15F2181	(Pamphlet)
HMR Supplement	15F2180	(Design Info)
Technical Reference	15F2182	

Model 25-286 Adapter Cards and Options:

All Charge Card	34F2863
Above Disk Software	30F5448
512k memory kit	30F5348
2MB memory kit	30F5360
3.5" 1.44Mb Diskette Drive	6451063
External 5.25" 360k Drive	4869001
External 5.25" 360k Adapter	6450244
5.25" Pin to Edge cable	6451033
20MB fixed disk	6451075
30MB fixed disk	6451076
External Tape Backup 60MB	6157001
External Tape Backup 150MB	6157002
External Tape Adapter	92X6063
Token Ring Adapter 16/4	25F7367
Token Ring Adapter II	25F9858
PC Network Broadband II	1501220
PC Network Baseband	1501221
AT Serial/Parallel Adapter	6450215
M-Audio Capture & Playback	87F9908
PS/2 Speech Adapter	1501216
PC Music Feature	81X8630
PS/2 Mouse	6450350
SDLC Adapter	1501205
Enhanced 5250 Adapter	30F5383

VIDEO CARD STB 214-234-8750, BOCA RESEARCH 407-997-6227, PARADISE 800-832-7778

Model 25-286 Common Service Part Numbers:

Bus Adapter	64F0182
System Board	64F0178
Clock Module	8509237
Memory Pack 256k	1497256
Memory Pack 1MB	74X8637
Display Assembly	64F0181
Power Cord	62X1045
1.44MB Diskette Drive 1/3"	33F8211
Diskette Drive Cable	00F2109

Diskette Drive Bezel	00F2112
20MB fixed disk	6128285
30MB fixed disk	6128279
101 key keyboard	1392090
84 key keyboard	1393290
Keyboard Cable	61X8898
Base to Cover Retainer	00F2134

Model 25-286 Common Questions & Answers:

Q: My Model 25-286 is hanging with a third party adapter card?

A: According to ECA 058, some Model 25-286's may experience a system hang condition if there is a non-IBM adapter card installed. This hang condition can be corrected by replacing the system board with FRU 91F8319. However, this problem is only associated with Model 25-286 machines within the following serial number range:

Model 8525-006	S/N BELOW D0000
Model 8525-036	S/N BELOW CAA00

If you experience the "Hang" condition;

1. Check the system board for FRU P/N 64F0178. This system board can also be identified by P/N 37F6657 on the BAR CODE label.

2. Remove the non-IBM adapter to see if the hang condition is eliminated.

If the ABOVE two criteria are met, replace the system board with FRU 91F8319, FREE of charge to the customer. The remarketer will be reimbursed for parts and labor by submitting a Warranty Reimbursement form. For additional information reference ECA 058.

Q: My Model 25-286 only has 512k. What is the standard memory 512k or 1MG?

A: When the Model 25-286 was first announced on May 10, 1990 (NDD 90-187) two of the models came with 512k standard (006 and the G06). The models 036 and G36 came with 1MB. However, on September 11, 1990 ALL Model 25-286's began shipping with 1MB. For additional information reference the announcement letter NDD 90-377.

Q: How do I upgrade memory above 1MB on the Model 25-286?

A: The Model 25-286 can be populated to 4MB on the system board. The 1MB standard memory consist of four 256k simms that populate the four memory slots on the system board. The next possible upgrade from 1MB is 2MB. In order to upgrade the Model 25 286 to 2MB, one must remove ALL 256k simms and install the 2MB memory kit 30F5360. After 2MB, the last system board upgrade is done by adding a second 2MB memory kit with the same part number. Each 2MB memory kit consist of two 1MB simms which must be installed in pairs. The Multifunction Adapter is not supported on the 25-286.

Q: Can the Multifunction Adapter be installed in the Model 25 286?

A: NO, the Multifunction Adapter is not supported on the Model 25-286. The card will actually work in the Model 25-286, but it is not supported because the card is too long to be housed inside the system unit.

Q: What solutions for EXPANDED memory are available for the Model 25-286?

A: IBM has tested two OEM products which provide a solution for utilizing expanded memory on the Model 25-286. Although these products are not manufactured by IBM, they are available through IBM. First, the ALL CHARGE CARD (34F2863) manufactured by All Computers, is a module that fits into the system's processor sockette. The processor in turn "piggy-backs" on top of the All Charge Card. This module, along with the its software (ALLMEM) allows the processor to view extended memory as expanded. The second solution IBM offers for expanded memory is via the ABOVE DISK. The Above Disk (30F5448) manufactured by Above Software is simply software that also allows the system's processor to view extended memory as expanded. For technical information on either of these products contact the manufacturer: All Computers (416) 960-0111 and Above Software (714) 815-2283.

Q: Can the XMA2EMS.SYS and XMAEMS.SYS drivers from DOS 4.0 be utilized to get expanded memory on the Model 25-286?

A: NO, The expanded memory drivers XMA2EMS.SYS & XMAEMS.SYS do not work for the memory on the system board or Multi-function Adapter. In order to get expanded memory on the ISA 80286's one must use an expanded memory manger such as the All Charge Card or the Above Disk.

Q: How should the 5.25" external 360k (4869001) diskette drive install on a Model 25-286 if the internal B drive cable will not connect to the adapter card?

A: The internal diskette drive cable on the Model 25-286 has a 34 pin type connection to the diskette drive. (1/3 High). Because of this, it will not connect to the External Drive Adapter (6450244) which has an edge type connection (1/2 High). Therefore, an additional option is required. This option (6451033) is a pin-to-edge adapter cable which allows the pin type diskette drive cable to connect to the edge type connection on the 5.25" drive adapter.

Q: When formatting a diskette in the 5.25" external 360k diskette drive 4869001, what may cause false error messages to occur?

A: Loose cable connections from the drive cable to the adapter can result in error messages that may imply a hardware problem with the drive or with the adapter when attempting to read, write, or format a diskette in the external 360k drive. In determining the cause, first ensure that all cable connections are securely fastened. It is best to physically disconnect and reconnect all cable connections as well as tighten the screws when applicable. Second, if the errors are still present, begin swapping the adapter, drive, and cable until the error is resolved.

Q: What type of display does the Model 25-286?

A: Similar to the 8513 display, the model 25-286 display is a 12-inch VGA display with a .28mm dot pitch.

Q: What are the screw mounts on the bottom of my Model 25-286?

A: The Model 25 and the Model 25-286 each have a system bolt down security feature that can be implemented by the customer if he desires to have the system physically secured to a table or desk. In order to use this feature, the customer would have to obtain 6mm metric thread bolts (M6) and drill holes through the desk. The length of the bolts should be 15mm (.06 inch) in addition to the work surface thickness. The bolts are inserted from below into the 3 threaded holes in the front "foot" on the bottom of the Model 25 (286) system unit.

Q: Why does the Speech adapter in my Model 25-286 conflict with my 3278/79 emulation adapter?

A: Due to a ROM confict, the Speech adapter 1501216 can not be used with a 3278/79 emulation adapter (8575427, 25F8459, or 53F6425).

PS/2 Model 30 286

Technical Specifications

Processor	INTEL 80286
Clock Speed	10Mhz
Bus Speed	5Mhz
Bus Size	16 Bit
Memory	1Mb - 16Mb
Memory Speed	120ns
Graphics	VGA
Diskette Drive	1.44Mb
Fixed Disk	20Mb,30Mb,45Mb
Power Supply	90 Watts
Expansion Slots	3 Full 16 BIT

Machine Type Description

8530-E01	One 1.44Mb diskette drive 101 key enhanced keyboard 1MB memory Before Sept. 26, 1988 (512k)
8530-E21	One 1.44Mb diskette drive 101 key enhanced keyboard 20MB Fixed Disk 1MB memory Before Spet. 26, 1988 (512k)
8530-E31	One 1.44Mb diskette drive 101 key enhanced keyboard 30MB Fixed Disk 1MB memory
8530-E41	One 1.44Mb diskette drive 101 key enhanced keyboard 45MB Fixed Disk 1MB memory

Model 30 286 Publications:

Guide to Operations	15F2143
HMS Supplement	15F2192 (Pamphlet)
HMS Supplement	01F0235 (Mapps)
HMR Supplement	01F0234 (Design Info)
Technical Reference	01F0237

Model 30 286 Adapter Cards and Options:

All Charge Card	34F2863
Above Disk Software	30F5448
512k memory kit	30F5348
2MB memory kit	30F5360
Multi-Function Adapter	30F5364
1.44Mb 1/2" Diskette Drive	6450353
1/2" Cable kit for 2nd 1.44Mb	6451037
1.44Mb 1/3" Diskette Drive	6451072
1/3" Cable Kit for 2nd 1.44Mb	6451034
External 5.25" 360k Drive	4869001
External 5.25" 360k Adapter	6450244
External 5.25" Adapter cable	27F4245
20MB Fixed Disk	6451075
30MB Fixed Disk	6451076
45MB Fixed Disk	N/A
External Tape Backup 60MB	6157001
External Tape Backup 150MB	6157001
External Tape Adapter	92X6063
Token Ring Adapter 16/4	25F7367
Token Ring Adapter II	25F9858
PC Network Broadband II	1501220
PC Network Baseband	1501221
AT Serial/Parallel Adapter	6450215
M-Audio Capture & Playback	87F9908
PS/2 Speech Adapter	1501216
PC Music Feature	81X8630
PS/2 Mouse	6450350
SDLC Adapter	1501205
Enhanced 5250 Adapter	30F5383

Model 30 286 Common Service Part Numbers:

Bus Adapter	27F4164
System Board	34F0046
Clock Module	8509237
Memory Pack 256k	1497256
Memory Pack 1MB	74X8637
Multi-Function Adapter	30F5447
Power cord	62X1045
Power Supply	27F4166
Key Lock Assembly	27F4169
Video Cable	27F4163
1.44Mb 1/2" Diskette Drive	72X8523
1.44Mb 1/3" Diskette Drive	33F8211
1/2"(A) drive Floppy Cable	27F4916
1/3"(A) drive Floppy Cable	27F4912
1/2"(B) drive Floppy Cable	34F0001
1/3"(B) drive Floppy Cable	34F0000
20MB Fixed Disk	6128285
30MB Fixed Disk	6128279
45MB Fixed Disk	92F0016
External 5.25" 360k Drive	72X6759
External 5.25" 360k Adapter	72X6757
5.25" Adapter Cable	27F4211

Model 30 286 Common Questions and Answers:

Q: With how much memory does the Model 30 286 ship?

A: When the Model 30 286 was first announced (September, 1988) it shipped with 512k of memory. On September 26, 1988, the Model 30 286 began shipping with 1MB of memory. Many dealers, prior to this announcement, had 30-286's in stock with 512k; therefore, based on dealer reported inventory level as of August 31, 1989, and orders shipped between September 1, 1989 and September 25, 1989 Dealers were provided with memory to upgrade their inventory of PS/2 Model 30 286's affected by the memory change.

Q: What is the proper way to upgrade the Model 30 286 from 1MB to 2MG?

A: First, remove ALL four 256k simms and install one 2MB memory kit 30F5360. This kit includes two 1MB simms. Install these memory simms into the two memory slots located at position J9 on the system board and run automatic configuration.

Q: What are the possible memory configurations for the Model 30-286?

A: The Model 30 286 can support memory configurations from 512k-16MB. See chart below for memory configuration:

MEMORY CONFIGURATION ON SYSTEM BOARD

512k	1 512k kit
1MB	2 512k kits
2MB	1 2MB kit (Remove 256k simms)
3MB	NOT POSSIBLE
4MB	2 2MB kits (Remove 256k simms)

MEMORY CONFIGURATION USING THE MULTIFUNCTION ADAPTER
****SYSTEM BOARD MUST CONTAIN ONLY 512K****

Populating Adapter with 512k Kits

Total Memory	
1 MB	1 512k kit
1.5MB	2 512k kits
2 MB	3 512k kits
2.5MB	4 512k kits
3 MB	5 512k kits
3.5MB	6 512k kits

Populating Adapter with 2MB Kits

Total Memory	
2.5MB	1 2MB Kit
4.5MB	2 2MB Kits
6.5MB	3 2MB Kits
8.5MB	4 2MB Kits
10.5MB	6 2MB Kits
12.5MB	8 2MB Kits

***With two Multifunction Adapter cards installed (one fully populated with 512k kits and the second fully populated with 2MB kits), one can have a total of 15.5MB in the system. 512k kit is 30F5348 and the 2MB kit is 30F5360.**

Q: What are the 256k simms with "SILVER" canisters?

A: The 256k memory simms containing "silver canisters" are the original 256k simms that come standard in the Model 30 286. They can not be ordered as a service part or product part. However, if they need to be replaced, the correct part number to order is 1497256. The replacement simms do not look the same, but they are equivalent. The replacements are "thin" 1x9 simms also used on the Multi-Function Adapter.

Q: When installing a memory kit on the Model 30 286, where should the first two simms be added?

A: The first two simms should be installed into the first two system board memory slots FARTHEST from the power supply. These slots will be labeled (A1 and B1 or A and B) and located at position J9 on the system board.

Q: Can I upgrade my Model 30 286 from VGA to XGA?

A: NO, IBM does not offer a product option that will upgrade the VGA to XGA. XGA graphics are available only on some 80386 and 80486 Microchannel systems.

Q: Without a B diskette drive cable, how does the 5.25" external 360k drive and adapter connect to the Model 30 286?

A: The Model 30 286 does not come with a (B) drive cable. When connecting the 5.25" external 360k drive, in addition to the drive and adapter (P/N's 4869001 & 6450244 respectively), an internal cable is required. The part number for the cable is 27F4245. This cable has three connections: The edge connection end attaches to the adapter card, the middle connection attaches to the (A) diskette drive cable that has to be unplugged from the system board, and finally the pin connection end plugs onto the system board in place of the diskette drive cable.

Q: What do I need to connect the external Streaming Tape Drive?

A: The Model 30 286 (also 25, 30, & 25-286) support the 6157 external tape backup unit. The hardware requirements for the Streaming Tape drive include the drive 6157001 (60MB) or 6157002 (150MB), and the drive adapter 92X6063. In addition to the hardware requirements, the appropriate SYTOS software utility is needed. The SYTOS tape utility version 2.0 (75X1147) or higher is required for the Models 25 and 30. The Models 30-286 and 25-286 require SYTOS version 3.0 (37F6334). The latest SYTOS PLUS Software (15F7194) is supported on the Models 25, 30, 25-286, and 30-286.

Q: When the Model 30 286 system unit is turned on, all that is displayed after the POST is the power on password "key" symbol. Is there a way to disable this password?

A: YES, there is a three pin jumper located at position J13 on the system board. First, power off the system and locate the jumper at position J13. Next, reseat the jumper so that it covers the opposite two pins of its original position. At this point, the power on password will be disabled when the system is rebooted. NOTE: There is no need to re-position the jumper.

Q: What is the service part number for the Model 30-286 keyboard cable? Is it the same as the other PS/2 systems?

A: The keyboard cable for the Model 30-286 (and 25-286) is unique to other PS/2 keyboard cables. In order to meet the Federal Communication Commission (FCC) standards, the keyboard cable has a special "toroid" on the connector to system unit. For replacement, use Part Number 27F4984 NOT 61X8898.

Q: How many serial ports can the Model 30 286 support?

A: The Model 30 286 BIOS can support TWO serial ports. Since the system unit has one integrated 25 pin serial port, only one additional serial port can be addressed (Via the AT Serial/Parallel Adapter). The Serial/Parallel Adapter must be set to the alternate position unless one needs the 9 pin serial port, located on the adapter, as COM 1. In this case, the system board serial port will be set to [COM 2] or [Disabled] (Via "Change Configuration" menu) and the AT Serial/Parallel Adapter jumpered to its primary position.

Q: How many Parallel ports can I have on My Model 30 286?

A: The Model 30 286 can support up to three parallel ports by installing two AT Serial/Parallel Adapters in addition to the integrated parallel port on the system board, one can have three parallel ports. With the starter diskette (Set Configuration Option), the system board parallel port can be set to (Parallel 1,2, or 3) For address assignments see chart next page.

Model 30 286 parallel port addresses with the AT Serial/Parallel adapter

With ZERO AT Serial/Parallel Adapters Installed

Set to Parallel 1	System Board	03BC	LPT1
Set to Parallel 2	System Board	0378	LPT1
Set to Parallel 3	System Board	0278	LPT1

With ONE AT Serial/Parallel Adapter Installed
Jumpered to PRIMARY Position

Set to Parallel 1	System Board	03BC	LPT1
	Primary Card	0378	LPT2
Set to Parallel 2	System Board	0378	**
	Primary Card	0378	**
Set to Parallel 3	System Board	0278	LPT2
	Primary Card	0378	LPT1

With TWO AT Serial/Parallel Adapters Installed
One Jumpered for Primary and the other for Alternate

Set to Parallel 1	System Board	03BC	LPT1
	Primary Card	0378	LPT2
	Alternate Card	0278	LPT3
Set to Parallel 2	System Board	0378	**
	Primary Card	0378	**
	Alternate Card	0278	LPT1
Set to Parallel 3	System Board	0278	**
	Primary Card	0378	LPT1
	Alternate Card	0278	**

** Port is disabled or inoperative because hard-wired addresses on the adapter cards will override choices made from a parallel port selection on the Change Configuration Menu.

Q: What is an intermittent 110 error on the Model 30 286.

A: An intermittent 110 error may be related to a memory parity problem. When diagnostics do not appear to point to memory modules as being the cause of the error condition, replacing the simm modules one at a time would be the best alternative to eliminate the error message. One should NOT replace the system board until he has first ruled out any problem with the memory simms.

Q: What solutions for EXPANDED memory are available for the Model 30-286?

A: IBM has tested two OEM products which provide a solution for utilizing expanded memory on the Model 30-286. Although these products are not manufactured by IBM, they are available through IBM. First, the ALL CHARGE CARD (34F2863) manufactured by All Computers, is a module that fits into the system's processor sockette. The processor in turn "piggy-backs" on top of the All Charge Card. This module, along with the its software (ALLMEM) allows the processor to view extended memory as expanded. The second solution IBM offers for expanded memory is via the ABOVE DISK. The Above Disk (30F5448) manufactured by Above Software is simply software that also allows the system's processor to view extended memory as expanded. For technical information on either of these products contact the manufacturer: All Computers (416) 960-0111 and Above Software (714) 815-2283.

Q: After upgrading the memory on my Model 30 286, the 164 (or 201) error can not be eliminated.

A: When configuring additional memory modules on the Model 30 286 system board with option adapters already installed, one may get a 164 or 201 error message during POST. If this occurs after upgrading the memory the following should be performed:

1.) Power off the system.
2.) Remove all option adapters
3.) Rerun automatic configuration
4.) Reinstall the option adapters
(Do not run configuration).

Q: Why is the model 30-286 experiencing an intermittent "Hang". Could it be a defective module on the system board?

A: A limited number of Model 30-286 system units were manufactured with system boards (FRU 34F0046) which may contain a defective module component. If a random or constant "Hang" is detected, the system board should be inspected. The serial number range of the affected system units are between 9033669-9055961 or A042972-A051580.

Suspect modules can be identified at position ZM46 on the system board. The defective module has a PN of "33F5540 ZM46 106". Other PN modules in this position are not defective and normal problem determination should be taken. If the system has a defective module, and is experiencing hang conditions, the system board should be replaced (PN 34F0046).

Q: Can an internal modem be installed in the Model 30-286?

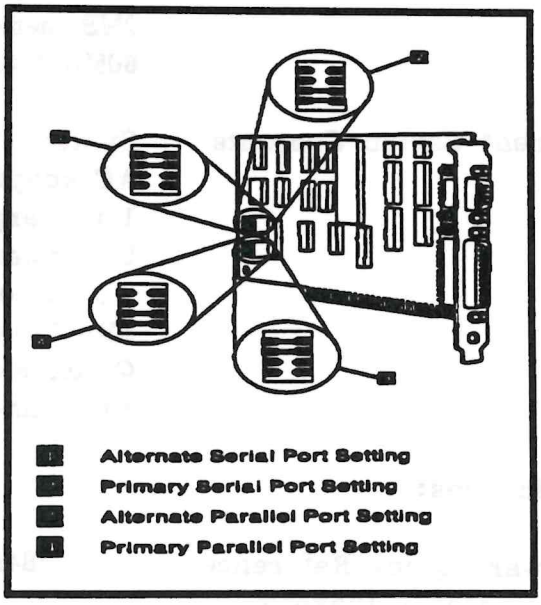
A: IBM has no internal modems for PS/2 ISA systems. Since the systems do not have an internal speaker that performs like the conventional type speaker on previous machines, IBM does not support an internal modem. The speaker in these systems is actually an "Audio Transducer Electronic Buzzer." External OEM modems should work fine.

Q: Can the XMA2EMS.SYS and XMAEMS.SYS drivers from DOS 4.0 be utilized to get expanded memory on the Model 30-286?

A: NO, The expanded memory drivers XMA2EMS.SYS & XMAEMS.SYS do not work for the memory on the system board or Multi-function Adapter. In order to get expanded memory on the ISA 80286's one must use an expanded memory manger such as the All Charge Card or the Above Disk.

Q: What are the jumper settings for the AT Serial/Parallel adapter which can be used on the PS/2 Models 25, 30, 25-286, and 30-286?

A: The Jumper positions for Primary and Alternate configurations are illustrated by the following diagram.


Alternate Serial Port Setting
Primary Serial Port Setting
Alternate Parallel Port Setting
Primary Parallel Port Setting

PS/2 Model L40SX

Technical Specifications:

Processor	INTEL 80386SX
Clock Speed	5, 10, 20MHz
Bus Speed	8 MHz
Memory	2MB - 18MB
Memory Speed	80ns
Display	VGA LCD
External Display	1 port
Diskette Drive	3.5" 1.44Mb
Fixed Disk	60MB 19ms
Power Supply	100-240V (Auto)

Machine Type Desctiption:

8543-044	One 1.44MB diskette drive 84 key clamshell keyboard Ext. Numeric keypad-17 keys VGA LCD Display 2MB memory 60MB fixed disk
Shipment Carton Contents	System Unit with keyboard AC adapter 1 rechargable battery pack US power cord US Numeric keypad & cable Slip Cover Carrying case Quick Reference & Diskette Hints and Tips Sheet

PS/2 L40SX Publications:

Hardware Quick Reference and Reference Diskette	84F7577
Hardware Maintenance Library	15F2271 (HMS & HMR)
Technical Reference Manual	15F2270
Data/Fax Technical Reference	15F2268

PS/2 L40SX Adapter Cards and Options:

Data Fax Modem	79F0198
Serial Adapter	79F0979
2MB memory kit	79F0999
4MB memory kit	79F1000
8MB memory kit	79F1001
Car Battery Adapter	79F1012
PS/2 Trackpoint	1397040
Communications Cartridge I	3541001
Quick Charger	79F0192
Carrying Case (Slip cover)	79F3981
Deluxe Carrying Case	79F0981
Traveling Case	79F3844
Rechargable Battery Pack	79F0197

PS/2 L40SX Common Service Part Numbers:

System Board	95F4879
LCD Display	79F0984
Fixed Disk (cable)	79F0988
Diskette Drive (cable)	79F0987
Fixed Disk Drive	79F1009
Diskette Drive	79F0983
Top Cover	79F3893
System-Status Display assembly	79F0991
AC Adapter	79F0993
Quick Charger	79F0995
Rechargable battery	79F0994
Lithium Backup Battery	79F0986
Standby Battery (Bridge)	79F0992
Speaker	79F0989
2MB memory simm	79F1002
4MB memory simm	79F1003
8MB memory simm	79F1004
Data/Fax Modem	79F0996
Data/Fax Communication Cable	94X1540
Serial Adapter	79F0998
Keyboard US Clamshell	1396181
Numeric Keypad	1396182
Numeric Keypad Cable	95F4779
Trackpoint mouse	1397090
I/O Connector door -Serial/Parallel port	79F3885
Bus Connector door -Expansion slot port	79F3886
Battery door	79F3887

PS/2 L40SX Common Questions & Answers:

Q: How does an external display connect to the L40sx?

A: First, power off the L40sx and connect the PS/2 display cable into the external display port that is located behind the bus connector door. This door is located in the back left corner of the system unit. Once you have the PS/2 display cable connected, power on the display and the L40sx system unit with the reference diskette in drive A. From the reference diskette logo screen, hit <ENTER>. This will bring you to the Main Menu. In the main menu choose option 3 to "Set Features". Once you are in the Set Features Menu, press F8 to page forward to the Select Display Features. Now tab down until the highlight bar is on "LCD" next to Display Device. By pressing the <Space Bar> change LCD to CRT and hit <ENTER>. At this point, the video should be transfered to your external PS/2 display.

* NOTE: This configuration will remain in effect until CRT is changed back to LCD or until the external PS/2 display is disconnected and the L40sx is rebooted.

Q: Where is the serial number on the L40SX?

A: The serial number on the L40sx is located beneath the battery. Open the battery door, lift up on the blue tab and slide the battery out. You will now be able to see the Type and Serial Number of the system.

Q: Why may the L40sx lock up after suspend mode?

A: The L40sx goes into suspend mode whenever one closes the LCD screen while the system is still running. In order to resume power, simply lift the LCD screen and within a few seconds the system will resume normal operation from the point it was suspended.*

*NOTE: If a system password has previously been set, then the keyboard will remain locked after the L40sx has resumed power until the password is typed and entered. The user will not see a password prompt.

Q: What math co-processor is available for the L40sx?

A: IBM does not manufacture a math co-processor for the L40sx. For a math co-processor, contact INTEL for part number and information on a CMOS low powered 387SX 20MHz chip. 1-800-538-3373.

Q: What may cause a device on the L40sx's parallel port to not function? The same device has no compatibility problem on other PS/2 machines.

A: The parallel port on the L40sx Laptop is unique to other PS/2 systems. Unlike the parallel port on other PS/2 systems, the L40sx's defaults to a "Bidirectional" mode allowing input and output instead of just output. Because of this, a OEM device requiring output only may not function. Before assuming the device is incompatible, first try configuring the parallel port to OUTPUT only. This can be done through debug by toggling a specific bit that controls the Bidirectional mode.

1) Type "Debug" at the DOS prompt. After <enter> the debug prompt will
2) At the debug prompt, enter "I 15E8" --- you should see a hexadecimal value "9E" which verifies that the user is at the correct location.
3) Next, type "O 15E8 96" (O not zero) -- this instructs the system to output the value 96 to location 15E8; therefore, setting the port for OUTPUT only.
4) To reset the parallel port for Bidirectional mode, use "O 15E8 9E"

NOTE: This configuration will be lost if the system is powered off or rebooted.

Q: What does a 226 error code during POST indicate on the L40sx?

A: If more than one 4MB memory kit is detected during the L40sx's POST routine, a 226 error code will appear. Although the L40SX can accept 2MB, 4MB, and 8MB memory modules, no more than ONE 4MB memory module can be present.

Q: When upgrading memory on the L40sx, in which connectors should the memory modules be installed?

A: 2MB memory modules should install in memory connector 1. On the other hand, 4MB and 8MB memory modules should be installed in memory connector 2.

Connector 2 Connector 1
SYSTEM FRONT

Q: What is the difference between the carrying cases available for the L40sx?

A: The L40sx has three available carrying cases. The first is the CARRYING CASE which ships standard with the system unit. The carrying case is a black leather case with a shoulder strap and can house the system unit, three diskettes, and portfolio material. It does NOT have space available for the AC adapter, extra rechargable battery, mouse or numeric keypad. However, the second case available, DELUXE CASE, is available only as an option (79F0981). It is made of a heavy black canvas and can house the system unit, AC adapter, extra rechargable battery, numeric keypad, IBM mouse, diskettes, and portfolio material. The third carrying case, also available as an option is the TRAVEL CASE (79F3844). The travel case can house the same options as the deluxe carrying case; the only difference is the Travel Case is a hard shell case with wheels.

Q: When performing 4MB memory upgrade on the L40sx, what may cause the system to only recognize a total of 4MB instead of 6MB?

A: Earlier shipments of the 4MB memory module kit for the L40sx may have shipped with a 2MB memory module instead of a 4MB. This 2MB memory module, in addition to the 2MB that is integrated onto the system board, could only upgrade the system two a total of 4MB. The 4MB memory module can be recognized by having "chips" on BOTH sides of the simm, whereas the 2MB memory module had chips on one side only. If the 4MB memory module kit actually contains a 2MB simm, simply send it back, and reorder the same product number again (79F1000). The misshipments have been corrected.

Q: What may cause the L40sx to hang after installing Windows on the L40sx? When it is powered up one can hear a series of beeps.

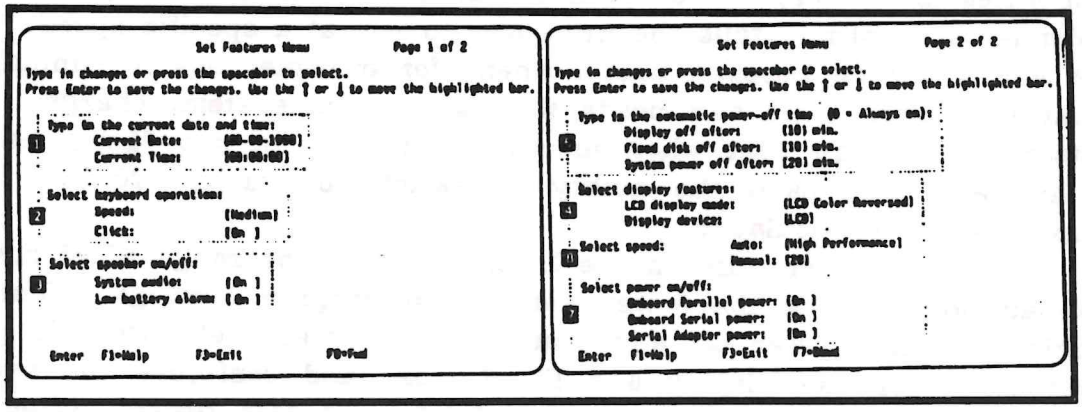
A: If these symptoms occur on the L40sx after installing windows, check to see if the CONFIG.SYS file is using the Himem.sys device driver. If so, it will appear similar to the following: DEVICE=C:\DOS\HIMEM.SYS. At the end of this device statement a (space) /M:2 parameter MUST be added. The /M:2 simply specifies use of the second memory handler. After this is included, the system should function properly with Windows.

Q: What is the Data/Fax modem, and does it come with software?

A: The L40sx has a Data/Fax modem option (79F0198) which includes a 2400 baud modem and a 9600 baud Fax combined into a single adapter card. This option also includes an operating/installation instruction guide, a fax utility program which allows one to SEND, RECEIVE, VIEW, and PRINT fax files, and a communication cable. It is important to note that the data/fax modem does NOT ship with modem software. Software to be used with the Modem must be purchased by an OEM vender.

Q: How does one set the power management features on the L40sx?

A: The power management options can be set through the Set Features Menu located on the L40sx reference diskette. This two page menu allows one to type in or select changes via the spacebar. The first page (1 of 2) provides the options to change time and date, select keyboard speed, turn keyboard click on or off, and select whether or not the speaker will sound for system audio and low battery alarm. The second page (2 of 2) allows one to set the automatic power-off times for the display, fixed disk, and system unit. In addition, it offers a selection for LCD display modes and whether an external display is to be connected. Furthermore, the system's Automatic and Manual speed settings can be configured. Last, the Power ON/OFF options can be confirmed for the system's parallel port, serial port, serial adapter, or data/fax modem.


Set Features Menu
Page 1 of 2
Type in changes or press the spacebar to select.
Press Enter to save the changes. Use the ↑ or ↓ to move the highlighted bar.
Type in the current date and time:
Current Date:
Current Time:
Select keyboard operation:
Speed:
Click:
Select speaker on/off:
System audio:
Low battery alarm:
Enter F1=Help F3=Exit F9=Fwd
Set Features Menu
Page 2 of 2
Type in changes or press the spacebar to select.
Press Enter to save the changes. Use the ↑ or ↓ to move the highlighted bar.
Type in the automatic power-off time (0 = Always on):
Display off after:
Fixed disk off after:
System power off after:
Select display features:
LCD display mode:
Display device:
Select speed:
Auto:
Manual:
Select power on/off:
Onboard Parallel power:
Onboard Serial power:
Serial Adapter power:
Enter F1=Help F3=Exit F7=Bkwd

Q: What is the battery life on the L40sx? If IBM rates the rechargeable battery at 3 hours, Why am I only getting about 45 minutes to an hour?

A: The battery life on the L40sx is dependant upon several circumstances. First, is the conditioning of the battery. This involves several cycles of fully charging and discharging the L40sx's rechargeable battery. (Charging can be performed through a 10 hour charge with the AC Adapter or a 2.5 hour charge with the Quick Charger --- A sufficient discharge can be determined at the point the L40sx's Low Battery Alarm sounds and then enters into suspend mode.) Conditioning is important for a Ni-Cad (Rechargeable) battery because of the memory cycle it tends to develop. In order to optimize the performance level of a rechargeable battery, a period of conditioning must be performed prior to normal usage. Second, is the Power Management program settings. This program (PS2.EXE) is important because it controls the power for I/O devices, automatic power off times, keyboard operation, speaker status, and most important, the processor speed. The faster the processor speed, the shorter the battery life will be.

When maximizing battery life, it is necessary to understand the Automatic v/s Manual Modes (Controlled by the blue A and M switch) which the L40sx uses. When switched to the A position, the L40sx operates in "Automatic" mode which can be set for ¹ Long Battery Life or ² High Performance. Long Battery Life sets the processor to run at 5Mhz with the ability to automatically switch to 10Mhz or 20Mhz depending upon the application currently running. High Performance, on the other hand, runs at 20Mhz only. When switched to the M position, the L40sx operates in "Manual" mode which can be set for 5Mhz, 10Mhz, or 20Mhz. Manual Mode simply tells the processor to run at a specific speed. The A and M switch becomes useful when, for example, one is running on battery power alone and needs to maximize the systems charge. The user can specify that when in Automatic mode to use "Long Battery Life" and still have the ability to switch to Manual "20Mhz" for a spreadsheet recalculation.

If the battery life on the L40sx seems in the range of 45 minutes to an hour, check the Power Management Program settings. Through this program, power off any unused I/O devices, set automatic power off times for the Display and Fixed disk, and configure the systems Automatic mode for "Long Battery Life". If this doesn't affect the battery life, either the battery was not properly conditioned or a possible hardware problem exists. In either case, have the system serviced by an IBM Authorized Dealer.

Q: What is the Suspend/Resume feature on the L40sx?

A: Suspend/Resume provides a convenient way to temporarily interrupt work without having to exit a software application or power off the system unit. When the cover is closed, the system enters suspend mode and beeps once to signal entering this mode. One can resume the session where he or she left off by simply opening the cover. Within 30 seconds, the system checks its functionality and restores the state of the system to the way it was before the cover was closed. By using the Suspend/Resume function, one can improve battery life for the times the system will be idle. However, suspend/resume should not be used as a substitute for the power switch. When the system is left in suspend mode for an extended period the battery will be discharged.

Q: What is a *PARTIAL* suspend mode?

A: Some application software interferes with the power management capability of the system and prevents it from fully suspending. If this happens, one will hear TWO beeps when the cover is closed indicating that the system has entered a partial suspend mode. When in a partial suspend mode the battery life is much shorter than in a full suspend mode; therefore, avoid leaving the system for an extended period of time.

Q: Is it possible to exchange the rechargeable battery while the L40sx is operating?

A: The rechargeable battery can be exchanged without powering off the system unit or exiting the software application. First, enter suspend mode by closing the cover. The system should beep once. Wait 10 seconds and then proceed to replace the discharged battery with a charge battery. After replacing the battery, simply open the cover and resume operation. *NOTE: If the system beeps twice, DO NOT make the battery exchange.*

Q: Of what use are the Default.bat, Travel.bat, and Printcom.bat batch files located on the L40sx Reference diskette?

A: These batch files provide the ability to quickly set up one's system for maximum performance or long battery life without having to use the reference diskette. In order to utilize these batch files, each file must first be copied from the reference diskette to the root directory on the fixed disk. Example:(C:>copy a:default.bat C:\ ). In order to execute one of these files, one must first be in the Root Directory (cd \), and simply type the filename "Default", "Travel", or "Printcom". Default.bat sets the system for maximum performance and powers on all features and options in the Power Management Program. Default.bat requires the economy switch to be set to the M position. Battery.bat sets the system for maximum battery life by enabling all of the Power Management economy capabilities. In addition, it powers off the serial port, parallel port, and the optional data/fax modem. Battery.bat requires the economy switch to be set to the A position. Last, Printcom.bat controls the power settings on the parallel port, serial port, and the optional data/fax modem. For example, C:>printcom on powers on all three ports. On the other hand, C:>printcom off powers off all three ports.

Q: Instead of using the automated batch files for customizing an L40sx system, is there any further customizing that can be performed?

A: YES, by specifically setting certain features that can be selectively powered on and off, one can tune the battery life and performance of the system. Exact battery life on a laptop computer is difficult to predict accurately, because the battery life varies according to how one sets the power management program options, the application being used, the number of hard disk or diskette accesses, and the initial state of the battery. Typically the system should yield a battery life in the range of 2 to 3 hours. The following table shows estimations of battery life savings for the features that can be selectively powered on or off:

Programmable Feature	*Estimated Battery Life Savings*
Screen Intensity Low v/s High	30 minutes
Fax/Modem Power Off	15 minutes
Hard disk Auto Power Off	10 minutes
Parallel Port Power Off	<5 minutes
Serial Port Power Off	<5 minutes

Q: Is there a problem with the L40sx utilizing the Suspend/Resume Function in a Windows 3.0 environment?

A: The L40sx's suspend/resume function may create unpredictable results in Windows if the PM_BIOS.386 driver is not installed. This driver is located on the L40sx Reference Diskette and must be copied to the Windows SYSTEM subdirectory.

For example, COPY A:PM_BIOS.386 C:\WINDOWS\SYSTEM.
In order to start the driver, one must reboot the his system.

Q: Does the L40sx require any special parameters in order run Windows 3.0 in 386 enhanced mode?

A: For Windows 3.0 to properly run in 386 enhanced mode a change is required to the SYSTEM.INI file located in the Windows directory. To edit this file, first start Windows by entering WIN/R at the command prompt. Next, in the Windows Program Manager, pull down the file menu and select RUN. At the command box, type SYSTEM.INI and press enter to load the file. Once the file appears, scroll until the [386Enh] section header appears. With the cursor at the end of the [386Enh] press enter to create a new line and enter the following lines exactly as indicated:

EMMEXCLUDE=E000-EFFF
DMABUFFERSIZE=64
DEVICE=PM_BIOS.386

NOTE: The PM_BIOS.386 must first be copied from the L40sx reference diskette to the Windows 3.0 SYSTEM subdirectory on the fixed disk.

Q: What changes are needed when using QEMM (Quarter Deck Expanded Memory Manager) on the L40sx?

A: For proper operation using QEMM, version 5.11 (or later) must be used. In addition, a change to the CONFIG.SYS file is needed. First, locate the statement in the CONFIG.SYS file which reads DEVICE=QEMM386.SYS and make the following addition:

DEVICE=QEMM386.SYS X=B000-B7FF

Next, remove the statements reading Device=Himem.sys and Device=Smartdrv.sys. Himem.sys can remain present (but inactive) if the /M:2 parameter is added to the end of the device statement, but Smartdrv.sys must be removed if QEMM is running. Smartdrv.sys causes a divide overflow when running with QEMM.SYS.
NOTE: Some QEMM versions require the VCPI driver from the L40sx Reference Diskette V1.01

Q: What is available for the Bus Connector port on the L40sx?

A: The Bus Connector port on the L40sx provides the capability to attach a Docking Station which provides the ability to use adapter cards externally. IBM announced a PS/2 Communications Cartridge I on October 17, 1991, which attaches to the L40sx's Bus Connector port. This device allows one half length IBM communication adapter to be used. The Communication Cartridge, available January 31, 1992, will accept the IBM Token Ring Adapter, the 3270 Adapter, or the 5250 Adapter.

Q: Is there an Expansion Unit for the L40sx that will allow more than one adapter card to be attached?

A: IBM does not offer an Expansion Unit with the capability to use more than one adapter card. However, an OEM vender, AXONIX, offers several Expansion Units that can house more than one adapter card. For Technical Support and adapter compatibility contact AXONIX at 1-800-866-9797.

Q: What does the NEW L40sx Reference diskette V1.01 provide?

A: The New Reference diskette for the L40SX provides several new highlights. The following list several of the Highlights:

1.) New Installation Program (uninstall) - a menu driver installation aid to install the new and revised utilities.
2.) Large Pointer Program which provides a larger mouse pointer for Windows 3.0 (Enhanced mode ONLY) and OS/2 1.3.01.
3.) Hot Key Program to reverse video, turn speaker on/off, dim/brighten display mode, and switch between LCD and CRT.
4,) New Power Management Driver for VCPI type memory managers, such as QEMM 5.11 or later, EMM386.EXE (DOS 5.0) and MM.SYS on the L40sx reference diskette.
5.) Quick resume feature when power management drivers are in use.
6.) Bug Fixes provided for Microsoft/Logitech Mice disappearing in Windows and resume.

PS/2 Model 35SX

Technical Specifications

Processor	INTEL 80386SX
Clock Speed	20 Mhz
Bus Speed	8 Mhz
Bus Size	16 bit
Memory	2MB - 16MB
Memory Speed	85ns
Graphics	16 Bit VGA
Diskette Drive	1.44mb *
*Optional	1.2mb & 2.88mb
Fixed Disk	40MB
*Optional	80MB
Power Supply	118 watt AUTO
Expansion Slots	3 Full 16 bit
Drive Bays	2 (One 1/2 & One 1/3)

Machine Type Description

8535-040

One 1.44MB diskette drive
Keyboard: 101 key enhanced
* 84/85 space saving
or * 122 host Keyboard
* Must specify when ordering.
2MB memory

8535-043

One 1.44MB diskette drive
Keyboard: 101 key enhanced
* 84/85 space saving
or * 122 host keyboard
* Must specify when ordering
2 MB memory

8535-24X

MEDIALESS
Keyboard: 101 key enhanced
* 84/85 space saving
or * 122 host keyboard
* Must Specify when ordering
2 MB memory
16/4 Token Ring Adapter with RIPL

8535-14X	MEDIALESS Keyboard: 101 key enhanced * 84/85 space saving or * 122 host keyboard * Must specify when ordering 2MB memory Ethernet Adapter (twisted pair) RIPL

Model 35SX Publications:

Guide to Operations	84F9844
Hardware Maintenance Library (HMS. HMR. Adv. Diags)	91F8643
Technical Reference Manual	85F1646
40mb/80mb fixed disk Supplement	91F9230

Model 35SX Adapter Cards and Options:

1MB Memory Module Kit 85ns	6450603
2MB Memory Module Kit 85ns	6450604
2MB Memory Module Kit 80ns	6450608
4MB Memory Module Kit 80ns	87F9977
8MB Memory Module Kit 80ns	6450129
1.44Mb Diskette Drive	6451130
2.88Mb Diskette Drive	6451106
1.2Mb 5.25" Diskette Drive	6451066
LS Diskette Drive Upgrade Kit	6451127
40Mb Fixed Disk Drive	6451073
80Mb Fixed Disk Drive	6451074
LS Fixed Disk Drive Upgrade Kit	6451128
360k External 5.25" Diskette Drive	4869001
5.25" External Drive Adapter	6450244
5.25" External Diskette Drive Cable	6451124
AT Serial/Parallel Adapter	6450215
Token Ring Adapter 16/4	25F7367
Token Ring Adapter II	25F9858
PC Network Broadband II	1501220
PC Network Broadband	1501221
Enhanced 5250 Adapter Card	30F5383
Enhanced 5250 Convenience Kit	49F5618
Internal Tape Backup	Not Supported
IBM PS/2 Mouse	6450350
IBM SDLC Adapter	1501205
IBM PC 1200 Baud External Modem	5481001
IBM PC 2400 Baud External Modem	5853001
M-Audio Capture & Playback Card	87F9908
PC Music Feature Card	81X8630
Floor Stand	95F5606

Model 35SX Common Service Part Numbers:

Bus adapter		79F3529
System Board		92F0140
Clock Module		8509237
1MB Memory Module Kit		90X8624
2MB Memory Module Kit		92F0104
4MB Memory Module Kit		87F9980
8MB Memory Module Kit		64F3607
Power Supply		79F3443
Power Cord (US)		62X1045
Cover Lock Assembly		**92F0003**
Also Requires Cover Lock Pawl		79F3459
Bezels		
3.5" Diskette Drive Bezel	1/3 high	85F0093
5.25" Diskette Drive Bezel	1/3 high	85F0068
5.25" Diskette Drive Bezel	1/2 high	64F4125
5.25" Blank Drive Bezel	1/3 high	79F3450
5.25" Blank Drive Bezel	1/2 high	85F0091
DASD Drives		
1.44MB Diskette Drive		85F0050
2.88MB Diskette Drive		64F4148
1.2MB Diskette Drive		64F4102
*Rail Kit for 1.2MB		85F0041
360K External Diskette Drive		72X6759
*External Drive Adapter		72X6757
40MB Hard Disk		64F4132
80MB Hard Disk		64F4133
Cables		
Hard Disk Drive Cable		79F3454
Diskette Drive Cable		79F3453
External Drive Adapter Cable		85F0076
MISC.		
101 Key Enhanced Keyboard	US	1392090
84/85 Space Saving Keyboard	US	1393290
122 Key Host Connected Kybd	US	1397050
Thumbscrew		79F3463
Floor Stand		79F3458
Miscellaneous Parts Kit		79F3471
Field Packaging		74F8998
Tri-Connector Wrap Plug	Used for Diagnostics	72X8546

Model 35SX Common Questions and Answers:

Q: What is the difference between the Model 35SX and the Model 40SX?

A: The PS/2 Models 35SX and 40SX are functionally identical. Each contain the same system board and utilize the same DASD devices (Exception: Internal Tape Backup is not supported on the 35SX); However, the difference is related to the number of drive bays and expansion slots that each system possesses. The 35SX has three expansion slots and three drive bays. This means that the system can house three AT style adapter cards as well as two internal DASD devices. On the other hand, the Model 40SX has five expansion slots and four drive bays, meaning it can house five AT style adapter cards and four internal DASD devices.

Q: Can the Model 35SX support IBM's new 2.88MB diskette drive?

A: The 2.88mb diskette drive is supported on the Model 35SX. The 2.88mb diskette drive is one of the highlights offered for the Model 35SX. In addition, diskette drive is media sensing (under DOS 5.0) and can read 1MB, 2MB, as well as, 4MB 3.5" diskettes. Because the drive is media sensing, format parameters are no longer needed when formatting a diskette. When the format command is applied, the drive will sense whether the diskette is a 1MB, 2MB, or 4MB and format it accordingly. Note: The 4MB diskettes are available from IBM Direct, 1-800-426-2468 (72X6111).

Q: Can the Model 35SX support an 80MB hard disk?

A: Although the Model 35SX can not be ordered with an 80MB hard disk, an 80MB hard disk option is available . If one is wanting to order a Model 35SX with an 80MB hard disk, he can order the diskette version of the Model 35SX and then add the 80MB option (PN 6451074).

Q: Of what type are the hard disk controllers used on 40MB/80MB hard disk?

A: The 40MB and the 80MB hard disk used on the Model 35SX are IDE (Integrated Drive Electronics). In addition, each drive has an integrated controller; therefore, eliminating the use of a bus expansion slot. Furthermore, each hard disk receives power via a four-pin AT Style connector supplied by the system's power supply. Along with the power connector, a 40-pin data cable links the hard disk and controller to the system board interface.

Q: With how much memory does the Model 35SX ship?

A: The Model 35SX ships with a 2MB memory module on the system board. Interestingly, the 35sx is the first IBM ISA system having the capability of upgrading memory to 16MB on the system without using a memory card in an expansion slot. A total of three memory module slots are located on the system board (The first is taken by the 2MB memory module that ships with the system). The two additional memory slots may be populated with 1MB, 2MB, 4MB, or 8MB memory modules in any combination up to 16MB.

Q: Is there a math coprocessor available for the Model 35SX?

A: IBM no longer supplies math co-processors for the IBM ISA systems. However, the Model 35SX requires a 80387SX 20Mhz math co-processor and can be acquired from an INTEL distributor.

Q: Of what use are the two jumpers on the Model 35SX system board?

A: The Model 35SX has two jumpers located on the system board. The first jumper is located at position J10. This jumper is an interrupt jumper which defaults to IRQ7 from the factory. In addition, this jumper should not be changed unless an "older" adapter card, requiring IRQ7 is to be used. The reason the J10 jumper will need to be changed with an "older" adapter card requiring IRQ7, is to eliminate an IRQ conflict with the system's integrated parallel port also using IRQ7. In this case, the alternate position IRQ5 should be used. IRQ5 can be activated by simply reseating the jumper on the opposite pins.

The second jumper located at position J14 provides a password disabling function. For example, if a customer brought his system in for service and had forgotten the power on password, the J14 jumper would provide a means for disabling the password so that service could be performed. The procedure for properly disabling the password is as follows. First, power off the system. Second, reseat the jumper on the opposite two pins. The system should now boot without a password. Note: The jumper does not need to be moved back to its original position. In order to set a new password, use the password utility in the "Set Features" menu located on the Model 35SX Starter Diskette.

Q: Can the starter diskette for the Model 40SX be used on the Model 35SX?

A: YES, the Starter Diskette as well as the Advanced Diagnostic Diskettes for the PS/2 Models 35SX and 40SX are interchangeable.

Q: Can a diskette drive or hard file from an earlier PS/2 ISA system be used on the Model 35SX?

A: Although the diskette drive and hard file connectors on the Model 35SX look similar to those found on earlier AT BUS ISA systems, it should be noted that some pin assignments are not the same. One reason is that the diskette drives on the PS/2 model 35SX had more capabilites, such as IBM's new 2.88mb diskette drive's media sensing capability. Second, the IDE hard files used on the Model 35SX have an identify command associated with them and receive power via a separate four pin AT style power connector. Because of a difference in pin assignments, earlier DASD devices are not supported on the Model 35SX.

Q: How does one set the "Start up Sequence" on the Model 35SX?

A: One of the highlights of the Model 35SX is the *Selectable Boot* feature that is configured through the Start up Sequence option under the Starter Diskette's "Set Features" Menu. When Start up Sequence is selected, the program will list the DASD devices installed in the startup order of the current "Boot" sequence. The Start up Sequence program will list a "Startup Number" and a "Device" associated with the start up number. This will vary according to what DASD devices are present. To illustrate, see the following example.

Startup Sequence

STARTUP NUMBER	DEVICE
1	1.44mb diskette drive
2	Fixed Disk 1
3	RIPL Network

The startup number indicates the order of the boot sequence. In the above example, the 1.44mb diskette is primary with the fixed disk and network adapter second and third respectively. However, this order may be changed to simply rearranging the device order via the program's function key commands.

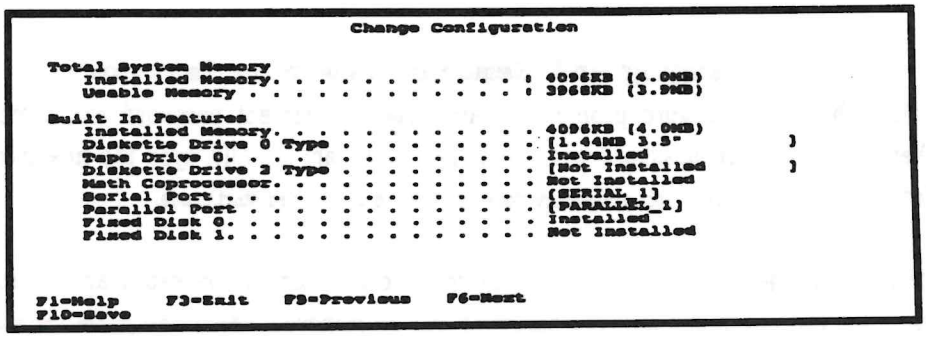
Note: Changing the Startup Sequence will also affect the DOS drive letter assignments.

Q: If the Model 35SX has 2MB of memory, why does it only count to 1920k during POST?

A: The Model 35SX does in fact ship with 2MB of memory, but 128k of this memory is being used for ROM shadowing. This ROM shadowing can improve the system's performance by copying 128k of ROM into a RAM area. Since the system can access RAM much faster than ROM, the 128k ROM shadowing actually enhances the system's performance whenever an access to ROM is required. In a case where a full 2MB is needed, the 128k ROM shadowing may be disabled through the Set Features Program on the Reference diskette. The Set Memory Remapping option under the Set Features Menu allows the ability to enable and disable the 128k ROM shadowing.

Q: After installing an adapter into the Model 35SX, why do I not see it listed in the *View Configuration*?

A: The View Configuration Program (Also the Change Configuration Program) does not list adapters. The options in each program will not change when adapters are installed. The "Built In Features" that are listed by the program will never change from: Installed Memory, Diskette Drives, Tape Drives, Math Co-processor, Serial/Parallel Ports, and Fixed Disk.


Change Configuration
Total System Memory
Installed Memory : 4096KB (4.0MB)
Usable Memory : 3968KB (3.9MB)
Built In Features
Installed Memory : 4096KB (4.0MB)
Diskette Drive 0 Type : [1.44MB 3.5"]
Tape Drive 0 : Installed
Diskette Drive 2 Type : [Not Installed]
Math Coprocessor : Not Installed
Serial Port : [SERIAL_1]
Parallel Port : [PARALLEL_1]
Fixed Disk 0 : Installed
Fixed Disk 1 : Not Installed
F1-Help F3-Exit F5-Previous F6-Next
F10-Save

However, if at the Starter Diskette's Main Menu, *Test the System* is selected, system checkout will show an equipment list including adapters. If the installed adapter does not show up in the equipment list then there may be the possibility that [1]the Model 35SX starter diskette does not contain the .DGS file associated with that particular adapter or that [2]the installed adapter does not come with a .DGS file. Files that do not come with a .DGS file will usually have a separate diskette for testing purposes (For example, the M-Audio Capture & Playback Adapter). In the first case where the starter diskette does not contain the .DGS file for the installed adapter, one can simply copy the file onto the Starter Diskette so that the system checkout can recognize the adapter card.

Q: What passwords can be set on the Model 35SX?

A: Two different passwords can be set on the Model 35SX. Although one does not have to set passwords to use his system, using passwords will help protect the information stored on the system from unauthorized users. The first password that can be set via the Starter Diskette is the *Power-on Password.* The Power-on Password can be set by the following instructions:

Setting Power-on Password

1. Insert the starter diskette into drive A and power on the system.
2. Select Set Features from the Main Menu
3. Select Set password and unattended start mode
4. Select Set power-on password and follow the instructions on the screen.

The power-on password may contain any combination up to seven characters (A-Z or 0-9) and must be typed when the password prompt appears after POST. The Power-on password can be changed and removed without using the Starter Diskette. The following instructs how to change and remove the Power-on password.

Changing and Removing Power-on Password

CHANGING: When the password prompt appears, type the current password and press the space bar . Next, type the new password and press the space bar. Finally, type the new password once again for verification. Note: this proceedure does not work in unattended start mode.

REMOVING: When the password prompt appears, type the current password and press the space bar. Next, hit the enter key and the password will be removed. Note: this proceedure does not work in unattended start mode.

The second password is called the *Keyboard Password.* The keyboard password allows the ability to lock the keyboard without having to power off the system unit. (This function works only in DOS) Prior to setting the keyboard password, the KP.COM file on the starter diskette must first be copied to the fixed disk root directory.

Example [C:>Copy A:KP.COM C:\]

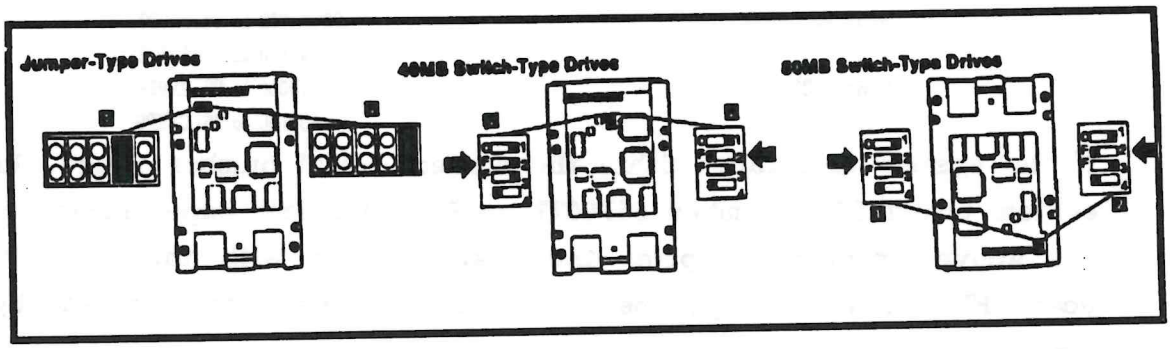
After the kp.com has been copied to the fixed disk root directory, the keyboard password may be enabled by typing KP at a DOS prompt. This will sound one beep and lock the keyboard until the password is re-entered (normally the power-on password). To change the keyboard password, enter KP/C at a DOS prompt and follow the instructions on the screen.

Q: What is the Unattended Start Mode on the Model 35SX?

A: The unattended start mode locks the system's keyboard when the computer is turned on, then allows the computer to load the operating system and carry out all of the instructions in the CONFIG.SYS and AUTOEXEC.BAT files before requiring you to enter your power-on password. For security reasons, the keyboard remains locked until the power-on password is entered (Note: A password prompt does not appear during unattended start mode). The unattended start mode can be set via the starter diskette set features program.

Q: What must be done when adding a second fixed disk to the Model 35SX system unit?

A: The Model 35SX fixed disks have switch/jumper settings so that the system can support two fixed disks. The primary fixed disk is called the **MASTER** and the secondary fixed disk is called the **SLAVE** drive. In addition, the fixed disks configuration for *Master* or *Slave* depends upon the jumper or switch settings located on the bottom of each fixed disk. According to the following diagram, each fixed disk (switch type or jumper type) can be configured for 1 **MASTER**(Primary) or 2 **SLAVE**(Secondary).



Q: What is ECA 079, 085, and 087 for the Model 35SX provide?

A: ECA 079 was the original Engineering Change Announcement for the Model 35sx and 40sx covering extra random characters during hard copy print operations utilizing the parallel port. This problem was only related to systems with more than one adapter card installed and a print spooler of an "Interrupt Driven" type. Print spoolers of the "Polling" type, such as those used by DOS and Windows 3.0, were not subject to the problem.

The serial number ranges of the systems subject to ECA 079 have been superceeded by ECA 085 and ECA 087. The following explains each ECA as it applies to the Model 35SX.

ECA 085

ECA 085 explains that a limited number of Model 35SX's may experience the following failures:

1. Failure to RIPL with a non-IBM Network Card
2. Non-IBM video adapter fails to operate properly. The monitor attached to the video adapter may display unintelligible video patterns or remain completely blank.
3. Various keyboard related failures that are not resolved with a keyboard replacement.

If a Model 35SX experiences any of the above problems, proceed further to determine if the particular model falls within the following serial number range and system board FRU number.

Model 8535-040	23-A0000 to 23-M9999
	78-TXD00 to 78-XPV99
Model 8535-043	23-AA000 to 23-TC999
	78-AAAA0 to 78-BLTG9
Model 8535-24X	23-TD000 to 23-ZK999
	78-BLTH0 to 78-CYKP9

If the system unit falls within the correct serial number range, has a system board FRU number 85F0077 or 92F0108, and experiences one of the above problems, replace the system board with the new system board FRU 92F0140. Systems not meeting these criteria are not eligible for this ECA.

NOTE: The BIOS date alone can determine whether or not the system qualifies for the ECA. If the system's BIOS date is 9/24/91 or earlier, the system qualifies (replace the system board with FRU 92F0140). However, if the BIOS date is 9/25/91 or later, the system does NOT qualify for this ECA and no action is required.

ECA 087

ECA 087 explains that a limited number of Model 35SX's may experience failures in data restore operations when using any device attached to the system board diskette drive connector and running backup/restore software which bypasses system BIOS. **(The Backup/Restore commands supplied with DOS do not experience this failure).** This problem may also be encountered on the PS/2 Internal Tape Backup Unit. Since the Internal Tape Backup Unit attaches to the system's diskette drive connector, the failure may be encountered running the PS/2 Internal Tape Backup Program Version 2.0.

If a Model 35SX experiences any of the above problems, proceed further to determine if the particular model falls within the following serial number range and system board FRU number.

Model 8535-040	23-A0000 to 23-M9999
	78-TXD00 to 78-XPV99
Model 8535-043	23-AA000 to 23-TC999
	78-AAAA0 to 78-BLTG9
Model 8535-24X	23-TD000 to 23-ZK999
	78-BLTH0 to 78-CYKP9

If the system unit falls within the correct serial number range, has a system board FRU number 85F0077 or 92F0108, and experiences the problem described above, replace the system board with the new system board **FRU 92F0140.** Systems not meeting these criteria are not eligible for this ECA.

NOTE: The BIOS date alone can determine whether or not the system qualifies for the ECA. If the system's BIOS date is 9/24/91 or earlier, the system qualifies (replace the system board with FRU 92F0140). However, if the BIOS date is 9/25/91 or later, the system does NOT qualify for this ECA and no action is required.

The BIOS date can be determined by entering into "BASIC" and typing the following syntax in ALL CAPS:

```
DEF SEG=-1:FOR X=5 TO 12:PRINT CHR$(PEEK(X));:NEXT
(xx/xx/xx) BIOS date will appear here
```

Q: What is the Keyboard Exchange program for the Model 35SX?

A: On June 18, 1991, IBM announced a keyboard exchange procedure for the PS/2 Model 35SX, 40SX, and 57SX keyboards. When required to meet customer needs and balance keyboard inventory, a one-for-one exchange of keyboards is provided. IBM intends to ship replacement keyboards within one business week of the receipt of returned keyboards, subject to product availability. In order to qualify for the exchange, the keyboards must be in unopened boxes, unused, and free of any external markings or labels other than those placed there by IBM. Last, a "Keyboard Exchange Equipment Request" form should be filled out and shipped along with the keyboards.

Return Keyboards Prepaid To:

IBM Corporation
C/O Dixie Warehouse & Cartage
3904 Produce Road
Louisville, KY 40213

PS/2 Model 40SX

Technical Specifications:

Processor	INTEL 80386SX
Clock Speed	20 Mhz
Bus Speed	8 Mhz
Bus Size	16 bit
Memory	2MB - 16MB
Memory Speed	85ns
Graphics	16 Bit VGA
Diskette Drive	1.44mb *
*Optional	1.2mb & 2.88mb
Fixed Disk	40MB or 80MB
Power Supply	118 watt Manual
Expansion Slots	5 Full 16 bit
Drive Bays	4 (Two 1/2 high. One 1/3 high and 1 3.5" 1/2 high)

Machine Type Description

8540-040

One 1.44MB diskette drive
Keyboard: 101 key enhanced
* 84/85 space saving
or * 122 host Keyboard
* Must specify when ordering.
2MB memory

8540-043

One 1.44MB diskette drive
Keyboard: 101 key enhanced
* 84/85 space saving
or * 122 host keyboard
* Must specify when ordering
2 MB memory
40MB Fixed Disk Drive

8540-045

One 1.44MB diskette drive
Keyboard: 101 key enhanced
* 84/85 space saving
or * 122 host keyboard
* Must Specify when ordering
2 MB memory
80MB Fixed Disk Drive

Model 40SX Publications:

Guide to Operations	84F7765
Hardware Maintenance Library (HMS. HMR. Adv. Diags)	85F1645
Technical Reference Manual	85F1646
40mb/80mb fixed disk Supplement	91F9230

Model 40SX Adapter Cards and Options:

1MB Memory Module Kit 85ns	6450603	
2MB Memory Module Kit 85ns	6450604	
2MB Memory Module Kit 80ns	6450608	
4MB Memory Module Kit 80ns	87F9977	
8MB Memory Module Kit 80ns	6450129	
1.44Mb Diskette Drive	6451130	
2.88Mb Diskette Drive	6451106	
1.2Mb 5.25" Diskette Drive	6451066	
40Mb Fixed Disk Drive	6451073	
80Mb Fixed Disk Drive	6451074	
360k External 5.25" Diskette Drive	4869001	
5.25" External Drive Adapter	6450244	
5.25" External Diskette Drive Cable	6451124	
AT Serial/Parallel Adapter	6450215	
Token Ring Adapter 16/4	25F7367	
Token Ring Adapter II	25F9858	
PC Network Broadband II	1501220	
PC Network Broadband	1501221	
Enhanced 5250 Adapter Card	30F5383	
Enhanced 5250 Convenience Kit	49F5618	
Internal Tape Backup Conv. Kit * Includes Drive. Software V2.0. DC2120 Data cartridge	92F3434	(DOS)
Internal Tape Backup Conv. Kit * Includes Drive. Software V1.01. DC2120 Data cartridge	92F3340	(OS/2)
Internal Tape Backup Install Kit C * Includes Cables. and Bezels	87F9826	
Internal Tape Software V2.0 Upgrade for DOS	92F3427	
IBM PS/2 Mouse	6450350	
IBM SDLC Adapter	1501205	
IBM PC 1200 Baud External Modem	5481001	
IBM PC 2400 Baud External Modem	5853001	
M-Audio Capture & Playback Card	87F9908	
PC Music Feature Card	81X8630	
Floor Stand	*Standard*	

Model 40SX Common Service Part Numbers:

Bus adapter and Support Bracket		85F0028
System Board		92F0140
Clock Module		8509237
1MB Memory Module Kit		90X8624
2MB Memory Module Kit		92F0104
4MB Memory Module Kit		87F9980
8MB Memory Module Kit		64F3607
Power Supply		64F1073
Power Cord (US)		62X1045
Cover Lock Assembly		92F0003
Bezels		
3.5" Diskette Drive Bezel (Bay 1)	1/3 high	85F0093
3.5" Diskette Drive Bezel (Bay 2,3)	1/2 high	84F0003
5.25" Diskette Drive Bezel (Bay 1)	1/3 high	85F0068
5.25" Diskette Drive Bezel (Bay 2,3)	1/2 high	64F4125
5.25" Blank Drive Bezel ((Bay 1)	1/3 high	79F3450
5.25" Blank Drive Bezel (Bay 2,3)	1/2 high	85F0091
3.5" Blank Drive Bezel (Bay 4)	1/2 high	85F0069
DASD Drives		
1.44MB Diskette Drive		85F0050
2.88MB Diskette Drive		64F4148
1.2MB Diskette Drive		64F4102
*Rail Kit for 1.2MB		85F0041
360K External Diskette Drive		72X6759
*External Drive Adapter		72X6757
40MB Hard Disk		64F4132
80MB Hard Disk		64F4133
Cables		
Hard Disk Drive Cable		85F0090
Hard Disk Mounting Tray		64F0141
Diskette Drive Cable		85F0089
External Drive Adapter Cable		85F0076
MISC.		
101 Key Enhanced Keyboard	US	1392090
84/85 Space Saving Keyboard	US	1393290
122 Key Host Connected Kybd	US	1397050
Miscellaneous Parts Kit		92F0015
Includes thumscrews. Adapter slot covers (5). 10 screws. 4 base feet		
Field Packaging		74F8958
Tri-Connector Wrap Plug	Used for Diagnostics	72X8546

Q: What is the difference between the Model 40SX and the Model 35SX?

A: The PS/2 Models 35SX and 40SX are functionally identical. Each contain the same system board and utilize the same DASD devices (Exception: Internal Tape Backup is not supported on the 35SX); However, the difference is related to the number of drive bays and expansion slots that each system possesses. The Model 40SX has five expansion slots and four drive bays, meaning it can house five AT style adapter cards and four internal DASD devices. On the other hand, the 35SX has three expansion slots and three drive bays. This means that the system can house three AT style adapter cards as well as two internal DASD devices.

Q: Can the Model 40SX support IBM's new 2.88MB diskette drive?

A: The 2.88mb diskette drive is supported on the Model 40SX. The 2.88mb diskette drive is one of the highlights offered for the Model 40SX. In addition, diskette drive is media sensing (under DOS 5.0) and can read 1MB, 2MB, as well as, 4MB 3.5" diskettes. Because the drive is media sensing, format parameters are no longer needed when formatting a diskette. When the format command is applied, the drive will sense whether the diskette is a 1MB, 2MB, or 4MB and format it accordingly. Note: The 4MB diskettes are available from IBM Direct, 1-800-426-2468 (72X6111).

Q: Of what type are the hard disk controllers used on 40MB/80MB hard disk?

A: The 40MB and the 80MB hard disk used on the Model 40SX are IDE (Integrated Drive Electronics). In addition, each drive has an integrated controller; therefore, eliminating the use of a bus expansion slot. Furthermore, each hard disk receives power via a four-pin AT Style connector supplied by the system's power supply. Along with the power connector, a 40-pin data cable links the hard disk and controller to the system board interface.

Q: Is there a math coprocessor available for the Model 40SX?

A: IBM no longer supplies math co-processors for the IBM ISA systems. However, the Model 40SX requires a 80387SX 20Mhz math co-processorand can be acquired from an INTEL distributor.

Q: With how much memory does the Model 40SX ship?

A: The Model 40SX ships with a 2MB memory module on the system board. Interestingly, the 40sx is the first IBM ISA system having the capability of upgrading memory to 16MB on the system without using a memory card in an expansion slot. A total of three memory module slots are located on the system board (The first is taken by the 2MB memory module that ships with the system). The two additional memory slots may be populated with 1MB, 2MB, 4MB, or 8MB memory modules in any combination up to 16MB.

Q: Of what use are the two jumpers on the Model 35SX system board?

A: The Model 35SX has two jumpers located on the system board. The first jumper is located at position J10. This jumper is an interrupt jumper which defaults to IRQ7 from the factory. In addition, this jumper should not be changed unless an "older" adapter card, requiring IRQ7 is to be used. The reason the J10 jumper will need to be changed with an "older" adapter card requiring IRQ7, is to eliminate an IRQ conflict with the system's integrated parallel port also using IRQ7. In this case, the alternate position IRQ5 should be used. IRQ5 can be activated by simply reseating the jumper on the opposite pins.

The second jumper located at position J14 provides a password disabling function. For example, if a customer brought his system in for service and had forgotten the power on password, the J14 jumper would provide a means for disabling the password so that service could be performed. The procedure for properly disabling the password is as follows. First, power off the system. Second, reseat the jumper on the opposite two pins. The system should now boot without a password. Note: The jumper does not need to be moved back to its original position. In order to set a new password, use the password utility in the "Set Features" menu located on the Model 35SX Starter Diskette.

Q: What is needed to connect the IBM Internal Tape Backup to the Model 40SX?

A: The 120MB Internal Tape Backup is supported on the Model 40SX. However, it is important to point out, just as the Model 40SX Announcement Letter does, that Version 2.0 of the IBM Tape Backup Software is required in order to use the Internal Tape Backup. Since the BIOS on the Model 40SX requires Version 2.0 of the Internal Tape Backup software, one may experience a "DMA OVERRUN" when using earlier versions of the software. Although the tape backup and the software can be purchased separately, IBM provides a Convenience Kit that includes all that is needed. (Installation Kit C must also be ordered in addition to Conv. Kit)

Q: Since Internal Tape Backup software version earlier than 2.0 are not supported with the Internal Tape Backup, is there a PN one can order to get version 2.0 or an Upgrade for the earlier version?

A: If a customer has an earlier version of the Internal Tape software, then he can obtain the correct Version 2.0 by one of two ways. He can order the entire package (DOS P/N 92F3433 or OS/2 P/N 92F3343) or just the upgrade (DOS only P/N 92F3427).

Q: Can a diskette drive or hard file from an earlier PS/2 ISA system be used on the Model 40SX?

A: Although the diskette drive and hard file connectors on the Model 40SX look similar to those found on earlier AT BUS ISA systems, it should be noted that some pin assignments are not the same. One reason is that the diskette drives on the PS/2 model 40SX had more capabilites, such as IBM's new 2.88mb diskette drive's media sensing capability. Second, the IDE hard files used on the Model 40SX have an identify command associated with them and receive power via a separate four pin AT style power connector. Because of a difference in pin assignments, earlier DASD devices are not supported on the Model 40SX.

Q: How does one set the "Start up Sequence" on the Model 40SX?

A: One of the highlights of the Model 40SX is the *Selectable Boot* feature that is configured through the Start up Sequence option under the Starter Diskette's "Set Features" Menu. When Start up Sequence is selected, the program will list the DASD devices installed in the startup order of the current "Boot" sequence. The Start up Sequence program will list a "Start up Number" and a "Device" associated with the start up number. This will vary according to what DASD devices are present. To illustrate, see the following example.

Startup Sequence

STARTUP NUMBER	DEVICE
1	1.44mb diskette drive
2	Fixed Disk 1
3	RIPL Network

The startup number indicates the order of the boot sequence. In the above example, the 1.44mb diskette is primary with the fixed disk and network adapter second and third respectively. However, this order may be changed to simply rearranging the device order via the program's function key commands.

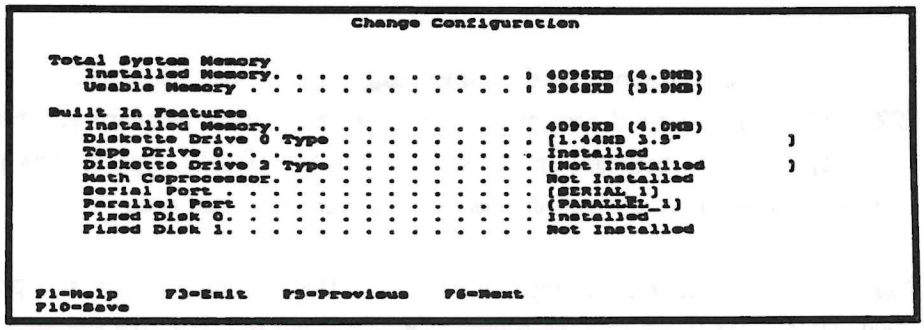
Note: Changing the Startup Sequence will affect the DOS drive letters.

Q: If the Model 40SX has 2MB of memory, why does it only count to 1920k during POST?

A: The Model 40SX does in fact ship with 2MB of memory, but 128k of this memory is being used for ROM shadowing. This ROM shadowing can improve the system's performance by copying 128k of ROM into a RAM area. Since the system can access RAM much faster than ROM, the 128k ROM shadowing actually enhances the system's performance whenever an access to ROM is required. In a case where a full 2MB is needed, the 128k ROM shadowing may be disabled through the Set Features Program on the Reference diskette. The Set Memory Remapping option under the Set Features Menu allows the ability to enable and disable the 128k ROM shadowing.

Q: After installing an adapter into the Model 40SX, why do I not see it listed in the *View Configuration*?

A: The View Configuration Program (Also the Change Configuration Program) does not list adapters. The options in each program will not change when adapters are installed. The "Built In Features" that are listed by the program will never change from: Installed Memory, Diskette Drives, Tape Drives, Math Co-processor, Serial/Parallel Ports, and Fixed Disk.


Change Configuration
Total System Memory
Installed Memory : 4096KB (4.0MB)
Usable Memory : 3968KB (3.9MB)
Built In Features
Installed Memory : 4096KB (4.0MB)
Diskette Drive 0 Type : [1.44MB 3.5"]
Tape Drive 0 : Installed
Diskette Drive 2 Type : [Not Installed]
Math Coprocessor : Not Installed
Serial Port : [SERIAL_1]
Parallel Port : [PARALLEL_1]
Fixed Disk 0 : Installed
Fixed Disk 1 : Not Installed
F1=Help F3=Exit F5=Previous F6=Next
F10=Save

However, if at the Starter Diskette's Main Menu, *Test the System* is selected, system checkout will show an equipment list including adapters. If the installed adapter does not show up in the equipment list then there may be the possibility that [1]the Model 40SX starter diskette does not contain the .DGS file associated with that particular adapter or that [2]the installed adapter does not come with a .DGS file. Files that do not come with a .DGS file will usually have a separate diskette for testing purposes (For example, the M-Audio Capture & Playback Adapter). In the first case where the starter diskette does not contain the .DGS file for the installed adapter, one can simply copy the file onto the Starter Diskette so that the system checkout can recognize the adapter card.

Q: What passwords can be set on the Model 40SX?

A: Two different passwords can be set on the Model 40SX. Although one does not have to set passwords to use his system, using passwords will help protect the information stored on the system from unauthorized users. The first password that can be set via the Starter Diskette is the *Power-on Password.* The Power-on Password can be set by the following instructions:

Setting Power-on Password

1. Insert the starter diskette into drive A and power on the system.
2. Select Set Features from the Main Menu
3. Select Set password and unattended start mode
4. Select Set power-on password and follow the instructions on the screen.

The power-on password may contain any combination up to seven characters (A-Z or 0-9) and must be typed when the password prompt appears after POST. The Power-on password can be changed and removed without using the Starter Diskette. The following instructs how to change and remove the Power-on password.

Changing and Removing Power-on Password

CHANGING: When the password prompt appears, type the current password and press the space bar . Next, type the new password and press the space bar. Finally, type the new password once again for verification. Note: this proceedure does not work in unattended start mode.

REMOVING: When the password prompt appears, type the current password and press the space bar. Next, hit the enter key and the password will be removed. Note: this proceedure does not work in unattended start mode.

The second password is called the *Keyboard Password.* The keyboard password allows the ability to lock the keyboard without having to power off the system unit. (This function works only in DOS) Prior to setting the keyboard password, the KP.COM file on the starter diskette must first be copied to the fixed disk root directory.

Example [C:>Copy A:KP.COM C:\]

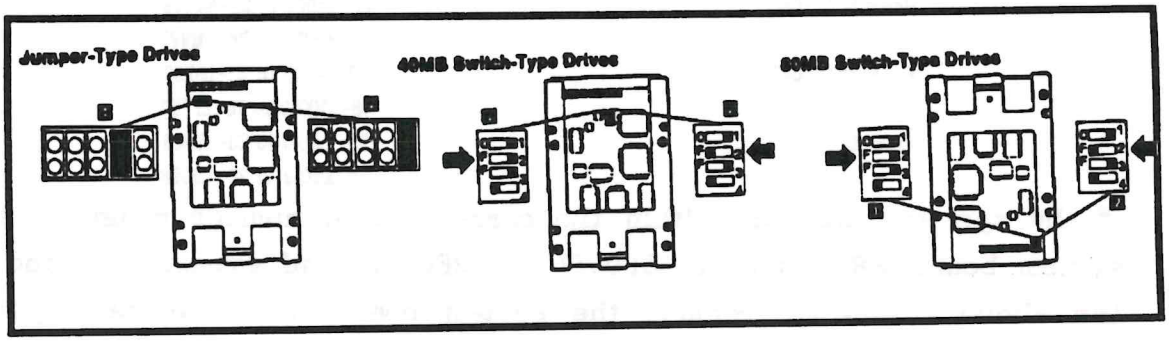
After the kp.com has been copied to the fixed disk root directory, the keyboard password may be enabled by typing KP at a DOS prompt. This will sound one beep and lock the keyboard until the password is re-entered (normally the power-on password). To change the keyboard password, enter KP/C at a DOS prompt and follow the instructions on the screen.

Q: What is the Unattended Start Mode on the Model 40SX?

A: The unattended start mode locks the system's keyboard when the computer is turned on, then allows the computer to load the operating system and carry out all of the instructions in the CONFIG.SYS and AUTOEXEC.BAT files before requiring you to enter your power-on password. For security reasons, the keyboard remains locked until the power-on password is entered (Note: A password prompt does not appear during unattended start mode) **The unattended start mode can be set via the starter diskette set features program.**

Q: What must be done when adding a second fixed disk to the Model 40SX system unit?

A: The Model 40SX fixed disks have switch/jumper settings so that the system can support two fixed disks. The primary fixed disk is called the MASTER and the secondary fixed disk is called the SLAVE drive. In addition, the fixed disks configuration for *Master* or *Slave* depends upon the jumper or switch settings located on the bottom of each fixed disk. According to the following diagram, each fixed disk (switch type or jumper type) can be configured for 1 MASTER(Primary) or 2 SLAVE(Secondary).



Q: What is ECA 079, 085, and 087 for the Model 40SX provide?

A: ECA 079 was the original Engineering Change Announcement for the Model 40SX and 35sx covering extra random characters during hard copy print operations utilizing the parallel port. This problem was only related to systems with more than one adapter card installed and a print spooler of an "Interrupt Driven" type. Print spoolers of the "Polling" type, such as those used by DOS and Windows 3.0, were not subject to the problem.

The serial number ranges of the systems subject to ECA 079 have been superceeded by ECA 085 and ECA 087. The following explains each ECA as it applies to the Model 40SX.

ECA 085

ECA 085 explains that a limited number of Model 40SX's may experience the following failures:

1. Failure to RIPL with a non-IBM Network Card
2. Non-IBM video adapter fails to operate properly. The monitor attached to the video adapter may display unintelligible video patterns or remain completely blank.
3. Various keyboard related failures that are not resolved with a keyboard replacement.

If a Model 40SX experiences any of the above problems, proceed further to determine if the particular model falls within the following serial number range and system board FRU number.

Model 8540-040	23-AA000 to 23-NM999
	78-NM000 to 78-PM999
Model 8540-043	23-AAA00 to 23-LGX99
	78-YMKW0 to 78-ZFFY9
Model 8540-045	23-AAAA0 to 23-LYDX9
	78-XBX00 to 78-YDG99

If the system unit falls within the correct serial number range, has a system board FRU number 85F0077 or 92F0108, and experiences one of the above problems, replace the system board with the new system board FRU 92F0140. Systems not meeting these criteria are not eligible for this ECA.

NOTE: The BIOS date alone can determine whether or not the system qualifies for the ECA. If the system's BIOS date is 9/24/91 or earlier, the system qualifies (replace the system board with FRU 92F0140). However, if the BIOS date is 9/25/91 or later, the system does NOT qualify for this ECA and no action is required.

ECA 087

ECA 087 explains that a limited number of Model 40SX's may experience failures in data restore operations when using any device attached to the system board diskette drive connector and running backup/restore software which bypasses system BIOS. (The Backup/Restore commands supplied with DOS do not experience this failure). This problem may also be encountered on the PS/2 Internal Tape Backup Unit. Since the Internal Tape Backup Unit attaches to the system's diskette drive connector, the failure may be encountered running the PS/2 Internal Tape Backup Program Version 2.0.

If a Model 40SX experiences any of the above problems, proceed further to determine if the particular model falls within the following serial number range and system board FRU number.

Model 8540-040	23-AA000 to 23-NM999
	78-NM000 to 78-PM999
Model 8540-043	23-AAA00 to 23-LGX99
	78-YMKW0 to 78-ZFFY9
Model 8540-045	23-AAAA0 to 23-LYDX9
	78-XBX00 to 78-YDG99

If the system unit falls within the correct serial number range, has a system board FRU number 85F0077 or 92F0108, and experiences the problem described above, replace the system board with the new system board FRU 92F0140. Systems not meeting these criteria are not eligible for this ECA.

NOTE: The BIOS date alone can determine whether or not the system qualifies for the ECA. If the system's BIOS date is 9/24/91 or earlier, the system qualifies (replace the system board with FRU 92F0140). However, if the BIOS date is 9/25/91 or later, the system does NOT qualify for this ECA and no action is required.

The BIOS date can be determined by entering into "BASIC" and typing the following syntax in ALL CAPS:

```
DEF SEG=-1:FOR X=5 TO 12:PRINT CHR$(PEEK(X));:NEXT
(xx/xx/xx) BIOS date will appear here
```

Q: What is the Keyboard Exchange program for the Model 40SX?

A: On June 18, 1991, IBM announced a keyboard exchange procedure for the PS/2 Model 35SX, 40SX, and 57SX keyboards. When required to meet customer needs and balance keyboard inventory, a one-for-one exchange of keyboards is provided. IBM intends to ship replacement keyboards within one business week of the receipt of returned keyboards, subject to product availability. In order to qualify for the exchange, the keyboards must be in unopened boxes, unused, and free of any external markings or labels other than those placed there by IBM. Last, a "Keyboard Exchange Equipment Request" form should be filled out and shipped along with the keyboards.

Return Keyboards Prepaid To:

IBM Corporation
C/O Dixie Warehouse & Cartage
3904 Produce Road
Louisville, KY 40213

PS/2 QUICK REFERENCE CHART

INFORMATION	Model 25	Model 30	Model 25-286	Model 30-286
Architecture:	ISA	ISA	ISA	ISA
Processor	8086	8086	80286	80286
Clock Speed	8Mhz	8Mhz	10Mhz	10Mhz
Bus Speed	4.77Mhz	4.77Mhz	5Mhz	5Mhz
Bus Size	8 bit	8 bit	16 bit	16 bit
Graphics	MCGA	MCGA	VGA	VGA
Power Supply	90-115w	70w	124.5w	90w
Expansion slots	1.5	3	1.5	3
Drive Bays	2	2	2	2
DASD Devices:				
Diskette Drive	720k	720k	1.44mb	1.44mb
Fixed Disk	20mb	20/30mb(001)	20mb/30mb	20/30/45mb
Tape Backup	EXT 6157	EXT 6157	EXT 6157	EXT 6157
System Board:				
Processor Wait States	0	0	1	1
Memory Standard/Maximum	512K/640K	640K/640K	1MB/4MB	1MB/4MB
Memory Speed	150ns	150ns	120ns	120ns
Memory Simms Used	256k/64x1 and 64x4	256k	256k/1MB	256k/1MB
Optional Memory Card	N/A	N/A	1	2 for 16MB Max
Math Coprocessor OPTIONAL	8087	8087	80287	80287
Battery	N/A	YES	YES	YES
Battery Life	N/A	15 Years	15 Years	15 Years
Mouse Port	1	1	1	1
Parallel Port Bi-Directional	1	1	1	1
Serial Port (RS232)	1	1	1	1
Serial Port Speed	9600 baud	9600 baud	19.200 baud	19.200 baud
Specifications:				
System Unit Weight	31-36 lbs	17.5 lbs	35.3-37 lbs	17.2-19 lbs
Fixed Disk Type	DBA	DBA	DBA	DBA
Floor Stand	N/A	N/A	N/A	N/A
Selectable Boot	N/A	N/A	N/A	N/A
Dimensions	H15" W12.6" D14.7"	H4" W15.6" D16"	H15" W12.6" D14.7"	H4" W15.6" D16"

INFORMATION	Model 35sx	Model 40sx	Model L40sx	
Architecture:	ISA	ISA	ISA	
Processor	80386	80386	80386	
Clock Speed	20Mhz	20Mhz	20Mhz	
Bus Speed	8Mhz	8Mhz	8Mhz	
Bus Size	16 bit	16 bit	16 bit	
Graphics	VGA	VGA	VGA	
Power Supply	118W	197W	100-240V AC ADAPTER	
Expansion slots	3	5	1 SERIAL/FAX	
Drive Bays	2	4	0	
DASD Devices:				
Diskette Drive	1.44MB	1.44MB	1.44MB	
Fixed Disk	40/80mb 17ms	40/80mb 17ms	60MB 19ms	
Tape Backup	N/A	120MB	N/A	
System Board:				
Processor Wait States	0	0	1	
Memory Standard/Maximum	2MB/16MB	2MB/16MB	2MB/18MB	
Memory Speed	85ns	85ns	80ns	
Memory Simms Used	1/2/4/8MB	1/2/4/8MB	1/2/4/8MB	
Math Coprocessor OPTIONAL	80387	80387	80387	
Battery	YES	YES	YES	
Battery Life	15 Years	15 Years	15 Years	
Mouse Port	1	1	1	
Parallel Port Bi-Directional	1	1	1	
Serial Port (RS232)	1	1	1	
Serial Port Speed	19.200 baud	19.200 baud	19.200 baud	
Specifications:				
System Unit Weight	20.9-23.8 lbs	26.3-27.8 lbs	7.7 lbs	
Fixed Disk Type	IDE	IDE	N/A	
Floor Stand	OPTIONAL	STANDARD	N/A	
Selectable Boot	YES	YES	N/A	
Dimensions	H4.5" W14.2" D15.6"	H6.7" W17.3" D15.5"	H2.1" W12.8" D10.7"	

Manufacturers' Support Phone Numbers

Abaton Technology	415-683-2226	Digital Research	408-646-6464
Activision	415-329-7699	Dow Jones News Retrieval	609-452-1511
Adaptec, Inc.	408-945-8600	Electronic Arts	415-572-2787
Adobe Systems, Inc.	415-961-0911	Enable	518-877-5040
Aldus Corp.	206-622-5500	Epson America	800-421-5426
Alloy Computer Product	508-875-6100	Everex Systems, Inc.	415-498-1115
Alsoft, Inc.	713-353-1510	Forth, Inc.	213-372-8493
Altos Computer Systems	408-434-6688	Funk Software, Inc.	617-497-6339
Amdek	408-435-2832	General Optimization	312-248-0465
American Micronics, Inc.	714-261-2428	Genesis Microsystems	415-964-9001
American Small Business	918-825-4844	Hayes	404-441-1617
Applied Engineering	214-241-6069	Hercules Computer Tech.	415-540-0749
Ashton-Tate	213-329-8000	Hewlett-Packard	208-323-2551
AST Research	714-727-9630	Hitachi Sales Corp.	800-447-2882
Atari	408-745-5759	Infocom, Inc.	617-576-3190
Autodesk, Inc.	800-445-5415	Intel Corporation	408-987-8080
Black Box Corp.	412-746-5500	Iomega Corp.	801-778-3000
Bloc Development	305-445-5415	Irwin Magnetic Systems	800-348-6242
Boca Research, Inc	305-997-6227	ITT Corp.	800-321-7661
Borland International	408-438-5300	Javelin Software Corp.	617-890-8080
Breakthrough Software	415-898-1919	Lotus Development	617-577-8500
Broderbund Software	415-492-3500	MicroPro	415-499-1200
Bytel Corporation	800-777-0126	Microsoft	206-454-2030
Canon USA, Inc.	516-933-6300	Okidata	800-654-3282
Claris	408-727-9054	Paradise	415-588-6000
CMS Enhancements	714-259-9555	Plus Development	800-826-8022
Commodore	215-436-4200	Quadram Products Group	404-551-1000
Compuserve	614-457-8650	QVS	800-622-9606
Computer Associates	408-942-1727	Seagate	800-468-DISC
Cosmos	206-643-9898	Software Publishing	415-962-8910
Cumulus Corporation	216-464-2211	Toshiba	800-631-3811
DAC Software	214-458-0038	Ven-Tel	800-538-5121
Data Transforms	303-832-1501	Western Digital	800-847-6181
Digital Communications	800-631-4171	WordPerfect	800-321-5906

Clem

9604